

## North West Rail Link Stage 2 Infrastructure Approval – Staging Report



<b>PROJECT</b>	North West Rail Link	<b>DATE</b>	22 April 2014
<b>GROUP</b>	Customer Strategy and Planning	<b>STATUS</b>	FINAL
<b>AUTHOR</b>	Hodgson, Stuart	<b>REVISION</b>	1.0
<b>COMPANY</b>	TfNSW	<b>FILE NUMBER</b>	A3320527
<b>FILE NAME</b>	NWRL Stage 2 Infrastructure Approval Staging Report		

Revision	Revision Date	Status	Brief reason for update	Name/Position/ Company	Author/Reviewer/ Approver	Signature

# Contents

<b>1</b>	<b>Introduction</b>	<b>4</b>
1.1	Background	4
1.2	Statutory Context	4
1.3	Purpose of this Staging Report	6
<b>2</b>	<b>Proposed construction stages</b>	<b>7</b>
2.1	Construction Sub-Stages	7
<b>3</b>	<b>Addressing the Conditions of Approval during delivery of Stage 2</b>	<b>11</b>
3.1	Approach	11
3.2	Project Plans required by the Conditions of Approval	11
3.3	Compliance	13
<b>Appendix A</b>	<b>Stage 1 Infrastructure Approval Compliance</b>	<b>15</b>
A.1	Schedule of Conditions against Stages 2a and 2b.	15
A.2	Schedule of Management and Mitigation Measures against Stages 1a, 1b and 1c.	36

# 1 Introduction

## 1.1 Background

The NWRL will deliver a new high frequency single deck train system initially operating as a shuttle between Cudgegong Road, Rouse Hill and Chatswood. The NWRL includes eight new stations, approximately 15.5 kilometres of tunnels from Epping to Bella Vista, a four kilometre elevated 'Skytrain' (viaduct) between Bella Vista and Rouse Hill, and conversion of the existing Epping to Chatswood Rail Link to deliver high frequency rapid transit services.

Key features of the NWRL project include:

- Single deck, rapid transit service between Cudgegong Road and Chatswood;
- Rolling stock – modern, single deck, rapid transit carriages;
- Eight new stations as presented in the reference scheme;
- Station precinct development with integration into the road and bus network;
- Two elevated stations (at Rouse Hill and Kellyville) and an at grade station at Cudgegong Road;
- Train stabling and maintenance facilities at Tallawong Road;
- 23 km of new track and rail infrastructure between Epping and Cudgegong Road, (unchanged from reference scheme);
- Rail track and systems (power, ventilation, communication, signalling, etc);
- Approximately 4 km of elevated rail track (The Skytrain) and 4 km of at grade track between Bella Vista and Cudgegong Road;
- Excavations for the Cherrybrook, Castle Hill, Hills Centre, Norwest and Bella Vista Stations;
- Approximately 15.5 km of twin running tunnels (approximately 6.1 metres in internal diameter) between Epping Station and Bella Vista Station. The running tunnels will be constructed primarily by tunnel boring machine;
- Cross passages between the running tunnels;
- Mined caverns, niches and openings for rail crossovers and equipment;
- Permanent concrete lining of all tunnels, caverns, cross passages and underground openings which must allow for all future track bed and rail services fixings; and
- Systems and stations on the existing 13 km Epping to Chatswood Rail Link upgraded and converted to create an integrated service from Cudgegong Road to Chatswood.

## 1.2 Statutory Context

The North West Rail Link is subject to environmental assessment under the Environmental Planning and Assessment Act 1979 (EP&A Act). It is classified as Critical State Significant Infrastructure. Under amendments to the EP&A Act, the Concept Plan for the project, which was approved in 2008, is taken to be a Staged Infrastructure Approval under Part 5.1 of the Act.

Before work can commence on the project, detailed environmental assessments have been carried out and approved by the Minister for Planning and Infrastructure. These Planning Approvals for the project are described below:

### 1.2.1 Major Civil Construction Works Planning Approval

The first Environmental Impact Statement (EIS 1) assessed impacts for Major Civil Construction Works. This covered activities including tunnelling and viaduct construction. It was approved by the Minister for Planning and Infrastructure on 25 September 2012.

The Planning Approval (Infrastructure Approval SSI-5100) and related environmental assessment documents are located at:

[http://majorprojects.planning.nsw.gov.au/index.pl?action=view\\_job&job\\_id=5100](http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=5100)

The Staging Report which describes how TfNSW and its Contractors will comply with this approval is located at:

<http://nwrail.transport.nsw.gov.au/>

This Approval was modified in April 2013 to incorporate changes to the Showground Station and adjacent precinct. The Modification and related environmental assessment documents are located at:

[http://majorprojects.planning.nsw.gov.au/index.pl?action=view\\_job&job\\_id=5645](http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=5645)

### 1.2.2 Stations, Rail Infrastructure and Systems Planning Approval

The second Environmental Impact Statement (EIS 2) assessed Stations, Rail Infrastructure and Systems. This covered construction and operation of the railway itself, including stations and stations precincts, rail systems and infrastructure. It was approved by the Minister for Planning and Infrastructure 8 May 2013.

The Planning Approval (Infrastructure Approval SSI-5414) and related environmental assessment documents are located at:

[http://majorprojects.planning.nsw.gov.au/index.pl?action=view\\_job&job\\_id=5414](http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=5414)

This Staging Report identifies how TfSNW and its Contractors will comply with the conditions Infrastructure Approval SSI-5414.

An application has been made to modify the Infrastructure approval SSI-5414, associated with altering the approved viaduct structure with a cable stayed bridge over Windsor Road, Rouse Hill. The Department for Planning and Infrastructure is collating the submissions received during the exhibition period.

The environmental assessment documents supporting the modification application is located at:

[http://majorprojects.planning.nsw.gov.au/index.pl?action=view\\_job&job\\_id=6389](http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=6389)

### 1.2.3 Rapid Transit Rail Facility Planning Approval

With the announcement of Sydney Rail Futures and the future Rapid Transit Network, a Rapid Transit Rail Facility (RTRF) is required. The RTRF provides for a train stabling and maintenance facility, a section of track for testing, administration staff and training facilities including an Operations Control Centre. An EIS has been prepared for the construction and operation of the RTRF and approval was granted by the Minister for Planning and Infrastructure on 15 January 2014.

The Planning Approval (Infrastructure Approval SSI-5931) and related environmental assessment documents are located at:

[http://majorprojects.planning.nsw.gov.au/index.pl?action=view\\_job&job\\_id=5931](http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=5931)

### **1.3 Purpose of this Staging Report**

This report has been prepared and structured to address the staging requirements in SSI-5414, condition B9.

In accordance with this requirement, this staging report:

- Describes the construction stages and timing; and
- Identifies the relevance of the conditions to each sub-stage, and how and when they will be complied with.

The Department of Planning and Infrastructure will be advised of the status of the Staging Report prior to the commencement of each sub-stage. Where amendments have occurred, an updated Staging Report will also be submitted.

## 2 Proposed construction stages

### 2.1 Construction Sub-Stages

In relation to the Stage 2 approval, delivery will be undertaken over two sub-stages:

- Sub-stage 2a: Surface and Viaduct Civil (SVC) works
- Sub-stage 2b: Operations Trains and Systems (OTS) works and operations

#### 2.1.1 Sub-Stage 2a – Surface and Viaduct Civils

The viaduct takes the North West Rail Link above ground for 4 km between Kellyville and Rouse Hill beginning just past Balmoral Road, Kellyville. It unites communities - avoiding the physical division that often comes with rail lines. It also minimises impacts on local flood plains.

The two new railway stations on the viaduct, Kellyville and Rouse Hill, will be elevated and the platforms will be above ground. A number of design principles have been developed for the viaduct such as ensuring it is in proportion with its environment. It is expected the viaduct will have a deck approximately 11 m wide – room for two rail lines plus a maintenance walkway for rail workers.

The viaduct will be used only by passenger trains, and not for cycleways or pedestrian walkways.

A number of design principles have been developed, including:

- Proportions of the viaduct must be considered – such as width and depth ratios, edge design and column supports;
- The viaduct must incorporate sustainability initiatives and minimise the use of resources and materials as well as have a low carbon footprint – such as water collection; and
- Rail infrastructure elements of the viaduct must be incorporated into the design holistically and be able to be maintained – such as acoustic sound walls, downpipes and lighting.

The viaduct will feature:

- Noise attenuation along its length as an integral part of the design; and
- Well proportioned and detailed components to ensure its appearance blends in with the environment.

The sequence of construction will involve:

- Piling work and excavation
- Pier construction
- Girder installation
- Parapet installation

The SVC contract was awarded to Impregilo Salini JV (ISJV) in December 2013, major construction works are not anticipated to commence until July 2014.

## 2.1.2 Sub-Stage 2b: Operations Trains and Systems

The North West Rail Link will deliver eight new stations at:

- Cherrybrook
- Castle Hill
- Showground
- Norwest
- Bella Vista
- Kellyville
- Rouse Hill
- Cudgegong Road

Existing stations on the Epping to Chatswood Rail Link will remain at Epping, Macquarie University, Macquarie Park and North Ryde – and are being upgraded to rapid transit standard.

All stations will be designed to reflect the character of local areas they serve, and where possible, environmentally friendly features such as solar panels, natural light and ventilation will be used.

All stations will meet the needs of pedestrians, cyclists, bus and taxi users. Stations will also provide easy access for people with a disability.

There are three types of stations for the North West Rail Link:

- **Underground stations:** Castle Hill, Showground and Norwest are being built underground in tunnels and will be built using a ‘cut and cover’ approach.
- **Open cut stations:** Cherrybrook, Bella Vista and Cudgegong Road are being built as open cut stations - that is, open to the sky, but below ground level.
- **Elevated stations:** Kellyville and Rouse Hill will be elevated stations on the skytrain.

Stations will be designed to provide for a seamless interchange between transport modes:

- Rouse Hill and Castle Hill stations will feature major bus interchanges. The role of Epping and Chatswood as important bus interchanges will also continue.
- Following the opening of the North West Rail Link, Transport for NSW will reconfigure the bus network to focus on stations and key centres including Castle Hill, Rouse Hill, Blacktown, Parramatta and Hornsby.
- Bus timetables will align with train times to minimise waiting times.
- Bus stops will be upgraded and relocated closer to new station entrances.
- All stations will provide weather-protected waiting areas for buses. Bus services to and from stations will run during all train service hours.
- Safe, secure and weather-protected bicycle facilities will be provided at all stations.



- Bicycle friendly design has been integrated into station and interchange design.
- All stations will include designated weather-protected waiting areas for passenger drop off and pick up.
- The needs of pedestrians including people with accessibility needs will be given the highest priority at each station.
- Stations are being designed to comply with the Commonwealth Disability Discrimination Act 1992.
- All stations will provide weather-protected waiting areas for taxis.

A number of design principles have been developed to ensure stations provide a positive and lasting legacy for future generations. Design principles include:

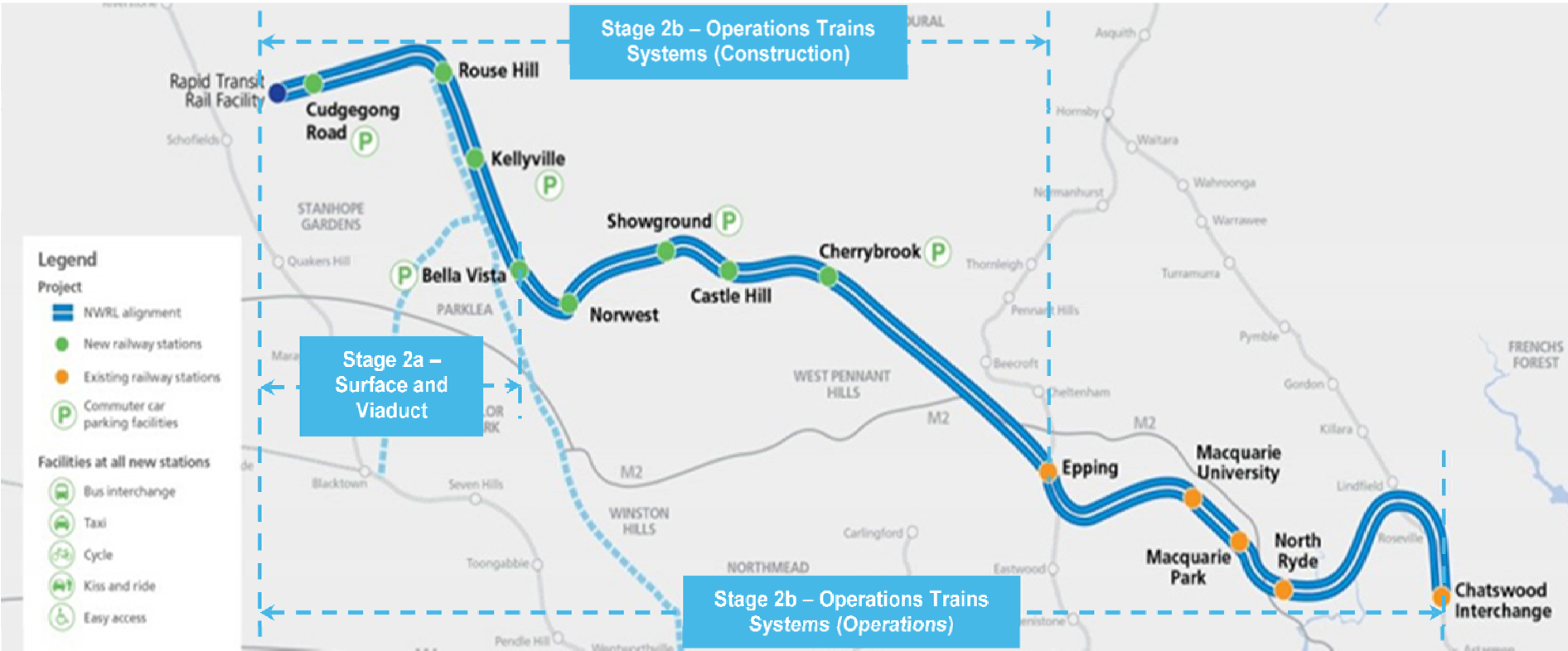
- Built elements must contribute to creating good public spaces by providing a high quality experience for customers, including direct, equitable, safe and convenient connections between transport modes and integration with adjacent land users
- Rail infrastructure elements of the station and service facilities (such as power and fresh air ventilation) must be integrated into the design holistically, while being easily maintained
- Urban design elements must facilitate active uses such as local retailing and services around stations, active and passive public spaces, quality landscaping and environmentally friendly car parking
- Urban design elements must follow 'safer by design' principles by eliminating blind spots and other potentially dangerous areas
- Ensuring material selection and design provide for robust and easily maintained finishes that consider graffiti, the effects of dust, rain and high usage
- Ensuring stations incorporate feasible and reasonable noise mitigation measures.

The rail systems and stations construction work component of the NWRL would commence in Q1 2015 as the sites are progressively handed over from contractors undertaking the Stage 1 major civil construction works (detailed in EIS 1). The total period of rail systems and stations construction works is expected to be approximately four to five years.

The OTS contract will be awarded in the second half of 2014, after which time this Staging Report will be reviewed with the successful Contractor to ensure alignment with the finalised Project Deed.

The general location and timing of the above stages is illustrated in Figure 1.

Figure 1 – Stage 1 North West Rail Link Works



# 3 Addressing the Conditions of Approval during delivery of Stage 2

## 3.1 Approach

Consistency in the management of environmental issues for each stage will be achieved through the application of the North West Rail Link Construction Environmental Management Framework (CEMF). Along with the Conditions of Approval, the CEMF governs the content and quality of all plans and sub-plans to be implemented during delivery of the project and sets out our minimum environmental management requirements for construction.

All of our Principal Contractors have contractual obligations to comply with the CEMF as well as the relevant Conditions of Approval (CoA).

No aspect of the staged approach to construction will affect the ability of the project to comply with the CoA.

## 3.2 Project Plans required by the Conditions of Approval

The CoA require a number of project plans (including management plans, reports, and programs) to be implemented. The development and submission of project plans will largely be the responsibility of our Principal Contractors responsible for each stage. Some plans, or elements of specific plans will, however, remain the responsibility of TfNSW.

Each Principal Contractor will develop the sub plans required by the CEMF, CoA and any other obligations or commitments to a level which is appropriate for their scope of works and the environmental risk of the activities they undertake. Table 1 identifies the timing for the release of each document.

Where a partial compliance has been identified for a document, the intent of the CoA's or CEMF will be complied with, however, a full plan or program may not be required. In such instances the requirements will be met through sections and procedures listed within the contractor's CEMP. For example given the nature of the early works it is more prudent to include relevant requirements into the contractor's Construction Environmental Management Plan.

The timing indicated in Table 1 in relation to sub - stage 2a and 2b will be subject to review as the procurement process evolves for those delivery packages. We will target project documentation for these stages to be developed within two to four months of contract award (refer Table 1).

**Table 1** Submission of project plans

Submission Timing <sup>1</sup>			
CoA	Project Plans	Stage 2a	Stage 2b
B9	Staging Report	April 2014	April 2014
C1	Interface Agreement(s) with Sydney Trains	na	Sept 2014
C5	Station Access Plans	na	pca
C10	Pedestrian and Cyclist Network and Facilities Strategy	na	pca
C11	Parking Management Strategy	na	pca
C15	Land Use Survey	July 2014	pca
C20	Operational Noise and Vibration Review	na	pca
C22	Noise and Vibration Compliance Assessment Report	na	pca
C30	Aboriginal Heritage Salvage Report	To be completed by TfNSW before Feb 2016 in accordance with SSI-5100 condition E9	
C31	Historical Excavation Report	To be completed by TfNSW before Feb 2016 in accordance with SSI-5100 condition E10	
C34	Stormwater and Flooding Management Plan	May 2014	pca
C35	Soil Salinity Report	May 2014	pca
C37	Water Quality Monitoring Program	May 2014	pca
C44	Urban Design and Corridor Landscape Plan	May 2014	pca
D1	Stakeholder and Community Involvement Plan	OSCIP approved under SSI-5100 updated where relevant in accordance with SSI-5414	
D3	Construction Complaints Management System	CCMS approved under SSI-5100 updated where relevant in accordance with SSI-5414	
D5	Compliance Tracking Program	CTP approved under SSI-5100 updated where relevant in accordance with SSI-5414	
E5	Road Dilapidation Report	July 2014	pca
E26	Business Management Plan	May 2014	pca
E33	Construction Environmental Management Plan	May 2014	pca
E34(a)	Construction Compound and Ancillary Facilities Management Plan	May 2014	pca
E34(b)	Construction Noise and Vibration Management Plan	May 2014	pca
E34(c)	Construction Traffic Management Plan	May 2014	pca

Submission Timing <sup>1</sup>			
CoA	Project Plans	Stage 2a	Stage 2b
E34(d)	Construction Soil and Water Management Plan (incorporating CEMF Groundwater Management Plan)	May 2014	pca
E34(e)	Construction Heritage Management Plan	May 2014	pca
E34(f)	Construction Flora and Fauna Management Plan	May 2014	pca
E34(g)	Construction Air Quality Management Plan	May 2014	pca
F2	Operational Performance Audit	na	pca
F4	Operational Environmental Management Plan	na	pca
-	Spoil Management Plan <sup>2</sup>	May 2014 (for information)	pca
-	Carbon and Energy Management <sup>2</sup>	May 2014 (for information)	pca
-	Sustainable Procurement Policy <sup>2</sup>	May 2014 (for information)	pca
-	Waste Management and Recycling <sup>2</sup>	May 2014 (for information)	pca

Notes:

1. pca = post contract award (Stage 2b is Q4 2014)
2. These plans are not required by the Stage 2 Infrastructure Approval but required by the NWRL CEMF
3. Partial compliance means that some conditions may not be applicable to that stage due to the nature of works. Refer to Appendix A and the relevant CoA for a description on partial compliance.

### 3.3 Compliance

#### 3.3.1 North West Rail Link Environmental Management System (EMS)

Given the nature of the project, TfNSW has developed a bespoke North West Rail Link Environmental Management System (EMS) based on the established system used by Transport Projects Division (formerly the Transport Construction Authority). The NWRL EMS has been in place since August 2011 to assist with monitoring compliance related to investigation activities and asset management. An environmental team was established at the same time to oversee compliance activities.

#### 3.3.2 Compliance Tracking Program

A Compliance Tracking Program has been prepared in accordance with Infrastructure Approval SSI-5100. This Program has been augmented to build in the compliance requirements of Stage 2 (Infrastructure Approval SSI-5414) as well as the Rapid Transit Rail Facility approval (Infrastructure Approval SSI-5931). The Stage 1 Compliance Tracking Program was approved by DP&I on 14 March 2013, and TfNSW will submit the updated Program for information once the Staging Report is accepted.

#### 3.3.3 Monitoring

Several layers of compliance checking will be applied during the construction of the NWRL. The CEMF requires that contractors maintain their own internal audit program to ensure they meet

baseline expectations set out in that document. TfNSW will conduct an additional auditing program across all stages with a specific focus on compliance with the conditions of approval.

TfNSW have also engaged independent Environmental Representatives (ERs) for the project. The ERs:

- Undertake regular site inspections with the Contractor's Environmental Managers and TfNSW representatives.
- Review compliance with the approvals on a quarterly basis.
- Review management plans and provide advice in relation to the level of risk associated with construction works.
- Provide independent advice on matters relating to compliance to the Contractors, TfNSW and DP&I if requested.

### **3.3.4 Staging of compliance**

An assessment has been made for each stage on how all Conditions of Approval apply to the works being undertaken and is provided as Appendix A1.

The Conditions of Approval (B1) also require compliance with the Submissions Report, Stage 2 - Stations, Rail Infrastructure and Systems. This report (section 9) provides a summary of management and mitigation measures to be implemented during the Stage 2 works. Appendix A2 identifies how these management and mitigation measures will be complied for each stage.

# **Appendix A**

## **Stage 1 Infrastructure Approval Compliance**

### **A.1 Schedule of Conditions against Stages 2a and 2b.**

ID	Undertaking	Stage 2a Surface and Viaduct Civils	Stage 2b Operations Trains and Systems
<b>SCHEDULE B</b>			
<b>ADMINISTRATIVE CONDITIONS</b>			
<b>TERMS OF APPROVAL</b>			
B1	The Proponent shall carry out the SSI generally in accordance with the: (a) SSI Application SSI-5414; (b) North West Rail Link: Environmental Impact Statement – Stage 2 – Stations, Rail Infrastructure and Systems, dated October 2012; (c) North West Rail Link Submissions Report, Stage 2 – Stations, Rail Infrastructure and Systems, Incorporating Preferred Infrastructure Report, dated March 2013; and (d) conditions of this approval.	Full compliance for both sub-stages	
B2	In the event of an inconsistency between: (a) the conditions of this approval and any document listed from condition B1(a) to B1(c) inclusive, the conditions of this approval shall prevail to the extent of the inconsistency; and (b) any document listed from condition B1(a) to B1(c) inclusive, and any other document listed from condition B1(a) to B1(c) inclusive, the most recent document shall prevail to the extent of the inconsistency.	Full compliance for both sub-stages	
B3	In the event of an inconsistency between the terms of this approval and the staged infrastructure approval granted in respect of the North West Rail Link on May 6 2008 (MP06_1057), as modified from time to time, the terms of this approval (including the documents listed in B1) shall prevail to the extent of the inconsistency.	Full compliance for both sub-stages	
B4	The Proponent shall comply with any reasonable requirement(s) of the Director General arising from the Department's assessment of: (a) any reports, plans or correspondence that are required and/or submitted in accordance with this approval; and (b) the implementation of any actions or measures contained within these reports, plans or correspondence.	Full compliance for both sub-stages	
B5	Subject to confidentiality, the Proponent shall make all documents required under this approval available for public inspection on request.	Full compliance for both sub-stages	
<b>LIMITS OF APPROVAL</b>			
B6	This approval shall lapse 10 years after the date on which it is granted, unless the works the subject of this SSI approval are physically commenced on or before that date.	Stage 2 works commenced in December 2013	
B7	This approval does not permit the construction of any buildings or the undertaking of uses that do not form part of the operation or are not ancillary to the SSI. This includes retail and commercial uses at stations and buildings and uses at residual redevelopment sites, unless required by the conditions of this approval. Interim and permanent approval of these buildings and uses shall be sought separately in accordance with the requirements of the Act.	Full compliance for both sub-stages	
<b>STATUTORY REQUIREMENTS</b>			
B8	The Proponent shall ensure that all licences, permits and approvals are obtained as required by law and maintained as required throughout the life of the SSI. No condition of this approval removes the obligation for the Proponent or its contractors to obtain, renew or comply with such licences, permits or approvals.	Full compliance for both sub-stages	
<b>STAGING</b>			
B9	The Proponent may elect to construct and/ or operate the SSI in stages. Where staging is proposed, the Proponent shall submit a Staging Report to the Director General prior to the commencement of the first proposed stage. The Staging Report shall provide details of: (a) how the SSI would be staged, including general details of work activities associated with each stage and the general timing of when each stage would commence; and (b) details of the relevant conditions of approval, which would apply to each stage and how these shall be complied with across and between the stages of the SSI.  Where staging of the SSI is proposed, these conditions of approval are only required to be complied with at the relevant time and to the extent that they are relevant to the specific stage(s).  The Proponent shall ensure that an updated Staging Report (or advice that no changes to staging are proposed) is submitted to the Director General prior to the commencement of each stage, identifying any changes to the proposed staging or applicable conditions.	TfNSW has prepared this Staging Report to reflect the delivery strategy for the Stage 2 approval only.	
B10	The Proponent shall ensure that all plans, sub-plans and other management documents required by the conditions of this approval and relevant to each stage (as identified in the Staging Report) are submitted to the Director General no later than one month prior to the commencement of the relevant stages, unless otherwise agreed by the Director General.  Note: These conditions do not relate to staged infrastructure within the meaning of section 115ZD of the EP&A Act.	Documentation will be submitted as required by this Staging Report, by TfNSW and our contractors	



ID	Undertaking	Stage 2a Surface and Viaduct Civils	Stage 2b Operations Trains and Systems
B11	<p>With the approval of the Director General, the Proponent may:</p> <p>(a) submit any strategy, plan, program (or the like) required by this approval on a progressive basis;</p> <p>(b) combine any strategy, plan, program (or the like) required by this approval; and</p> <p>(c) update corresponding strategies, plans and programs prepared to meet the requirements of State Significant Infrastructure Approval SSI-5100 for the purposes of meeting the requirements of the SSI.</p> <p>Notes:</p> <ul style="list-style-type: none"> <li>• While any strategy, plan or program may be submitted on a progressive basis, the Proponent will need to ensure that the existing operations on site are covered by suitable strategies, plans or programs at all times; and</li> <li>• If the submission of any strategy, plan or program is to be staged, then the relevant strategy, plan or program must clearly describe the specific stage to which the strategy, plan or program applies, the relationship of this stage to any future stages, and the trigger for updating the strategy, plan or program.</li> </ul>	Documentation will be submitted as required by this Staging Report, by TfNSW and our contractors	
<b>COMPLIANCE</b>			
B12	The Proponent shall ensure that any strategy, plan, program (or the like) incorporates mitigation measures identified in the documents listed in condition B1, as relevant, and as modified by this approval.	Full compliance for both sub-stages	
B13	The Proponent shall ensure that employees, contractors and sub-contractors are aware of, and the need to comply with, the conditions of this approval relevant to their respective activities.	Full compliance for both sub-stages	
B14	The Proponent shall be responsible for environmental impacts resulting from the actions of all persons that it invites onto the site, including contractors, sub-contractors and visitors.	Full compliance for both sub-stages	
<b>SCHEDULE C</b>			
<b>ENVIRONMENTAL PERFORMANCE</b>			
<b>DESIGN</b>			
<b>Suburban Rail</b>			
C1	<p>The Proponent shall enter into an Interface Agreement(s) with RailCorp to ensure the successful operational integration of the SSI and the heavy railway network and the protection of physical and operational RailCorp assets and services, during construction and operation.</p> <p>The Agreement(s) shall incorporate measures that ensure the safety and structural integrity of rail infrastructure facilities and assets, including auxiliary infrastructure; the safe and effective operation of these assets; and facilitate efficient and safe modal integration. The Agreement(s) shall incorporate proactive monitoring, and remediation and redress actions, including emergency procedures, should there be a design, mitigation or management failure.</p>	SVC construction activities are not anticipated to impact upon RailCorp's physical or operational assets and services.	TfNSW to retain the responsibility for this interface agreement.
<b>TRANSPORT AND ACCESS</b>			
<b>Traffic and related Network Facilities</b>			
C2	<p>The SSI shall be designed and constructed with the objective of integrating with the existing and proposed road and related transport networks and minimising adverse changes to the efficiency, accessibility and safety of the networks, and where feasible and reasonable, facilitate an improved level of service, in relation to permanent and operational changes. Detailed design and assessment of related traffic, parking, pedestrian and cycle accessibility impacts and changes shall be undertaken:</p> <p>(a) in consultation with, and to the reasonable requirements of the Traffic and Transport Liaison Group;</p> <p>(b) in consideration of existing and future demand, connectivity (in relation to permanent changes), performance and safety requirements;</p> <p>(c) to minimise and manage regional and local area traffic impacts;</p> <p>(d) to ensure access is maintained to property and infrastructure; and</p> <p>(e) to meet relevant design, engineering and safety guidelines, including Austroads, Australian Standards, and RMS (RTA) requirements.</p> <p>Changes shall be certified by an appropriately qualified person(s) and certified copies of civil, structural and traffic signal design plans shall be submitted to the relevant road authority for consideration and acceptance prior to the commencement of the relevant works.</p>	Full compliance for both sub-stages	
C3	Bridgeworks (under and over) and other structures in the proximity of the road and associated transport networks shall be designed to ensure the efficient and safe operation of the networks.	Full compliance for both sub-stages	
C4	Permanent road works, including vehicular access, signalised intersection works, and works relating to pedestrians, cyclists, and public transport users will be subject to safety audits demonstrating consistency with relevant design, engineering and safety standards and guidelines. Safety audits shall be submitted to the Traffic and Transport Liaison Group (condition C8) prior to the completion and use of the subject infrastructure and shall be made available to the Director General upon request.	Full compliance for both sub-stages	
<b>Station Access Plans</b>			

ID	Undertaking	Stage 2a Surface and Viaduct Civils	Stage 2b Operations Trains and Systems
C5	<p>The Proponent shall develop a Station Access Plan(s) to inform the final design of transport and access facilities and services, including footpaths, cycleways, passenger facilities, parking, traffic and road changes, and integration between current and proposed public domain and transport initiatives for each station. The Plan(s) shall consider, but not necessarily be limited to the area within defined and justified station walking and cycling catchments, and shall take into account:</p> <ul style="list-style-type: none"> <li>(a) a station access hierarchy consistent with the transport planning principles defined within the EIS;</li> <li>(b) safe, convenient and efficient access to stations and interchange between transport modes;</li> <li>(c) current levels of access and service for all modes and services;</li> <li>(d) the consideration of state and local transport initiatives and plans;</li> <li>(e) the identification of opportunities and constraints presented by existing and proposed transport and access infrastructure and services;</li> <li>(f) patronage changes resulting from land use, population, employment, transport infrastructure and service changes;</li> <li>(g) integration with existing and proposed transport infrastructure and services;</li> <li>(h) pedestrian, cycle, bus, taxi, vehicle, and emergency vehicle access and parking, infrastructure and servicing requirements;</li> <li>(i) legislative requirements and applicable guidelines;</li> <li>(j) safety audits , including but not limited to a review of traffic facility and cycle changes to ensure compliance with Austroads design criteria;</li> <li>(k) final design, infrastructure, management and service measures, and the level of access and service to be achieved for all users; and</li> <li>(l) operational management provisions for future operational requirements, including maintenance, security and management responsibilities.</li> </ul> <p>The Plan(s) shall be prepared in consultation with the Traffic and Transport Liaison Group required under condition C8 and shall be supported by traffic and transport analysis. Where necessary, consultation shall also be undertaken with major landholders adjoining station precincts. The Plans shall detail a delivery and implementation program and shall be provided to the Director General and made publicly available prior to construction, unless otherwise agreed by the Director General.</p>	Not applicable to this sub-stage	Full compliance
C6	<p>In developing the Station Access Plan(s) required under condition C5, the Proponent shall consider:</p> <ul style="list-style-type: none"> <li>(a) traffic and accessibility design requirements (condition C2);</li> <li>(b) Parking Management Strategy requirements (condition C11);</li> <li>(c) Pedestrian and Cyclist Network and Facilities Strategy requirements and infrastructure (condition C10);</li> <li>(d) Cherrybrook Station requirements (condition C12);</li> <li>(e) bus layover requirements (condition C13); and</li> <li>(f) the Urban Design and Corridor Landscaping Plan (condition C44).</li> </ul>	Not applicable to this sub-stage	Full compliance
C7	<p>The Station Access Plan(s) required under condition C5 shall be reviewed by a qualified traffic and transport professional(s), independent of the detailed design process for the SSI, having regard to the requirements of this approval. The independent, qualified professional(s) shall be approved by the Director-General prior to commencement of the review process.</p> <p>Note: nothing in this approval precludes the use of staff employed by the Proponent or other agencies, to review the Station Access Plan(s), provided that those staff are suitably qualified, independent of the design process and have been approved by the Director-General to act in that role.</p>	Not applicable to this sub-stage	Full compliance
<b>Traffic and Transport Liaison Group</b>			
C8	<p>A Traffic and Transport Liaison Group shall be established to inform the detail design of temporary construction and permanent operational traffic and transport measures and to inform ongoing management measures prior to and during construction of the SSI. The Group shall be chaired by the Proponent and shall comprise representatives from the Department (Land Release) relevant road authorities (including the RMS and Councils), transport operators (including bus and taxi operators), and emergency services as required. The Group shall be consulted on and shall inform the preparation of the Construction Traffic Management Plan (condition E34) and Station Access Plan(s) (condition C5).</p>	The TLLG established by TfNSW under SSI-5100 will be retained for SSI-5414	
C9	<p>The Proponent shall undertake supplementary analyses as required by the Traffic and Transport Liaison Group and, where relevant, detailed modelling of traffic changes and impacts that have the potential to have a significant detrimental impact on traffic flow efficiency with the objective of informing and improving road network changes and traffic management measures. The requirement for and details of the modelling shall be undertaken in consultation with the Traffic and Transport Liaison Group. The revised traffic management measures, including changes to the pedestrian, bicycle and public transport networks, shall be incorporated into the Construction Traffic Management Plan (condition E34(c)) and Station Access Plan(s) (condition C5).</p>	Full compliance for both sub-stages	
<b>Pedestrian and Cyclist Network and Facilities Strategy</b>			

ID	Undertaking	Stage 2a Surface and Viaduct Civils	Stage 2b Operations Trains and Systems
C10	<p>A Pedestrian and Cyclist Network and Facilities Strategy shall be prepared in consultation with Councils, RMS, Bicycle NSW and Bike North. The Strategy shall identify pedestrian and cycle paths and associated facilities that are to be provided as part of the SSI with the objective of providing seamless, coherent, visible, and safe pedestrian and cycle access to, from and through stations. The Strategy shall consider:</p> <ul style="list-style-type: none"> <li>(a) existing and proposed local and regional pedestrian and cycle facilities and strategies;</li> <li>(b) pedestrian and cycle access to and from stations, including local and regional pedestrian and bicycle connections through and around each station;</li> <li>(c) demand for pedestrian and cycle facilities with consideration of encouraging an increased pedestrian and cycle mode share;</li> <li>(d) pedestrian and cycle infrastructure and facilities at each station and access paths to, from and through stations, including the provision of separated cycle paths, particularly where paths form part of an existing cycle thoroughfare;</li> <li>(e) safe, secure and weather protected bicycle storage at each station (including all three classes);</li> <li>(f) signage and wayfinding along routes and at each station; and</li> <li>(g) the requirements of relevant design standards, including Austroads and NSW bicycle guidelines.</li> </ul> <p>The Proponent shall implement the Strategy and incorporate it into the Station Access Plan(s) (condition C5).</p>	Not applicable to this sub-stage	Full compliance with TfNSW leading the activity being supported by the OTS contractor
<b>Parking Management Strategy</b>			
C11	<p>The Proponent shall prepare a Parking Management Strategy in consultation with the RMS, bus operators and Councils to manage car parking impacts at stations and adjoining areas as a result of the operation of the SSI. The Parking Management Strategy shall include, but not be limited to:</p> <ul style="list-style-type: none"> <li>(a) the provision of parking spaces consistent with those identified in EIS documentation, except as required by this approval;</li> <li>(b) the replacement of lost on street car parking in the vicinity of stations, where feasible and reasonable;</li> <li>(c) the safe placement, access to (including safe pedestrian and cycle access) and management of parking;</li> <li>(d) a monitoring and reporting methodology for the utilisation of park and ride spaces and impacts on parking supply and turnover on adjoining streets at each station; and</li> <li>(e) the identification of measures to address on street parking impacts, such as resident parking schemes, should monitoring identify a significantly detrimental impact on local parking supply.</li> </ul> <p>The Proponent shall be responsible for the coordination of measures in consultation with the relevant Council. The Strategy shall be submitted to the Director-General and the reporting of monitoring incorporated into the Compliance Tracking Program. The monitoring shall be undertaken in conjunction with the monitoring under condition F3 and apply for a minimum of one year following commencement of operation.</p>	Not applicable to this sub-stage	Full compliance
<b>Cherrybrook Station</b>			
C12	<p>The Proponent shall undertake a review of bus and vehicular access options for Cherrybrook Station, with the objective of reducing potential impacts on local roads within the vicinity of the Station. The review shall address, but not be limited to: transport access hierarchy; bus catchment and servicing requirements; modal interchange; safety and amenity; local traffic; and parking loss. The outcomes of the review shall be considered in the Station Access Plan(s)(condition C5).</p>	Not applicable to this sub-stage	Full compliance with TfNSW leading the activity being supported by the OTS contractor
<b>Bus Layovers</b>			
C13	<p>The Proponent shall, during the detailed design of stations, consult with bus operators in relation to the provisions of both short and long term bus layover facilities, including driver facilities, during construction and operation. The Proponent shall ensure that the reasonable requests of bus operators are met.</p>	Not applicable to this sub-stage	Full compliance
<b>Cycle</b>			
C14	<p>The SSI shall be designed and operated so as not to preclude the carrying of bicycles within stations, in station infrastructure and on rail vehicles.</p>	Not applicable to this sub-stage	Full compliance
<b>NOISE AND VIBRATION</b>			
<b>Land Use Survey</b>			
C15	<p>Prior to construction of the SSI, a detailed land use survey to identify potentially critical areas that are sensitive to construction and operational noise (air and ground borne) and vibration impacts, shall be undertaken having regard to the type of land use. The results of the survey shall be incorporated into the Construction Noise and Vibration Management Plan (condition E34(b)) and the Operational Noise and Vibration Review (condition C20).</p> <p>The land survey, prepared to meet condition E11 of State significant Infrastructure Approval SSI 5100, may be revised, if necessary and resubmitted.</p>	Full compliance using the land use survey produced by ISJV under SSI-5100 for SSI-5414	Full compliance
<b>Operational Noise and Vibration</b>			

ID	Undertaking	Stage 2a Surface and Viaduct Civils	Stage 2b Operations Trains and Systems
C16	<p>Rail line components of the SSI shall be designed and operated with the objective of not exceeding the airborne and ground-borne noise trigger levels at existing development, at each stage of the SSI, as presented in the Interim Guideline for the Assessment of Noise from Rail Infrastructure Projects (DECC and DoP, 2007).</p> <p>In particular, the final viaduct design shall incorporate feasible and reasonable methods and materials that will reduce radiated noise from the structure.</p> <p>For the purpose of this condition, existing development includes all development that at the date of this approval, has been carried out in the vicinity of the rail corridor and any such development approved prior to the determination of this SSI, but only to the extent that the location of sensitive receivers is known.</p>	Full compliance for both sub-stages	
C17	<p>Stationary facilities (including but not limited to stations; the TSF; substations; and heating, ventilating and air conditioning equipment) shall be designed and operated with the objective of meeting operational noise levels derived from the NSW Industrial Noise Policy (NSW Government, 2000).</p> <p>In particular, the procurement of rail vehicles should facilitate reduced noise levels from train auxiliary systems, and public announcement systems at stations shall be designed and installed in accordance with best practice.</p> <p>Operational noise levels shall be reviewed within 2 years of commencement of operations and at any subsequent time as required by the Director General. The review shall have regard to the status of land use planning, any land use changes and the background noise environment within areas adjacent to the fixed facilities at the time of the relevant review. The Proponent shall submit the results of the review to the Director General. Any proposed changes to the operational noise levels as a result of the review shall be included in a revised ONVR.</p>	Not applicable to this sub-stage	Full compliance
C18	<p>Road noise attributed to the operation of the SSI, shall be considered and mitigated with the objective of meeting the noise criteria presented in the <i>NSW Road Noise Policy</i> (DECCW, 2011).</p>	Not applicable to this sub-stage	Full compliance
C19	<p>The SSI shall be designed and operated with the objective of not exceeding the vibration goals for human exposure for existing sensitive receivers, as presented in <i>Assessing Vibration: a Technical Guideline</i> (DECC, 2006).</p>	Not applicable to this sub-stage	Full compliance
C20	<p>The Proponent shall prepare an Operational Noise and Vibration Review (ONVR) within 6 months of commencing construction unless otherwise agreed by the Director-General to confirm noise (air and ground-borne) and vibration control measures that will be implemented for the SSI. The ONVR shall be prepared in consultation with the Department (Land Release), the EPA and relevant Councils and shall:</p> <ul style="list-style-type: none"> <li>(a) identify the appropriate operational noise and vibration objectives and levels for receiving existing development, including sensitive receivers and critical working areas;</li> <li>(b) predict the operational noise and vibration impacts at receiving existing development based on the final design and operation of the SSI (this should include consideration of rail movements associated with future Tier 1 rail operations);</li> <li>(c) examine all feasible and reasonable noise and vibration mitigation measures, with a focus on source control and design;</li> <li>(d) identify specific physical and other mitigation measures for controlling noise and vibration at the source and at the receiver (if relevant) including location, type and timing for the erection of permanent noise barriers and/or other noise mitigation measures;</li> <li>(e) include a consultation strategy to seek feedback from directly affected property owners on the noise and vibration mitigation measures; and</li> <li>(f) include procedures for operational noise and vibration complaints management, including investigation and monitoring (subject to complainant agreement).</li> </ul> <p>The ONVR is to be independently verified by a noise and vibration expert. The scope of the verification exercise undertaken by the noise and vibration expert is to be developed by the Proponent in consultation with the EPA. The verification will be undertaken at the Proponent's expense and the independent expert shall be approved by the Director-General. The ONVR and independent review is to be submitted to the Director-General prior to the commencement of the laying of rail track or the construction of physical noise mitigation structures, unless otherwise agreed to by the Director-General.</p> <p>Where the noise and vibration objectives cannot be achieved, the assessment shall present an analysis of feasible and reasonable noise and vibration mitigation measures, and the 'best practice' achievable noise and vibration outcome for each activity.</p> <p>The Proponent shall implement the identified noise and vibration control measures prior to operation and make it publicly available.</p>	Not applicable to this sub-stage	Full compliance
C21	<p>The Proponent shall consult with the Department (Land Release) and relevant Councils during detailed design of the SSI to facilitate appropriate rail infrastructure and land use planning responses to potential noise and vibration impacts within the NWGC and new development adjacent to the SSI.</p>	Full compliance retained by TfNSW	
Operational Noise and Vibration Compliance			

ID	Undertaking	Stage 2a Surface and Viaduct Civils	Stage 2b Operations Trains and Systems
C22	<p>The Proponent shall undertake a noise and vibration compliance assessment to confirm the predictions of the noise assessment referred to in the ONVR (condition C20). The noise and vibration compliance assessment shall be developed in consultation with the EPA and be undertaken within twelve months of the commencement of operation of the SSI, or as otherwise agreed by the Director-General. The assessment shall include, but not necessarily be limited to:</p> <p>(a) noise and vibration monitoring and compliance assessment, to assess compliance with conditions C15 to C18 of this approval and the ONVR;</p> <p>(b) methodology for assessment;</p> <p>(c) details of any complaints received relating to operational noise and vibration impacts;</p> <p>(d) any required recalibration of the noise and vibration model taking into account considerations such as land use change;</p> <p>(e) an assessment of the performance and effectiveness of the applied noise and vibration mitigation measures; and</p> <p>(f) identification, if required, of further noise and vibration mitigation measures to meet the requirements of C15 to C18 of this approval and the objectives identified in the ONVR.</p> <p>A Noise and Vibration Compliance Assessment Report providing the results of the assessment shall be submitted to the Director-General and the EPA within 60 days of its completion. If the assessment indicates an exceedance of the noise and vibration objectives identified in the ONVR, the Proponent shall implement further feasible and reasonable measures (where required) to mitigate these exceedances in consultation with affected property owners.</p>	Not applicable to this sub-stage	Full compliance
<b>ECOLOGY</b>			
<b>Ecological Monitoring</b>			
C23	The Ecological Monitoring Program required under condition C1 of State Significant Infrastructure Approval SSI-5100 shall continue and be updated as necessary during the construction of the SSI, unless otherwise agreed by the Director-General, in consultation with OEH and relevant Council's depending on the outcomes of monitoring.	Full compliance using the Ecological Management Plan developed by ISJV under SSI-5100 for SSI-5414	Full compliance
<b>Riparian and Aquatic Ecology</b>			
C24	Riparian Buffer Widths for waterways which are affected by the SSI are to be managed for a Total Riparian Buffer Width of between 10m to 50m where feasible and reasonable, dependant on the Category of Watercourse determined by the Riparian Assessment for the North West Rail Link (Ecological Australia, 2011)	Full compliance for both sub-stages	
C25	Watercourses affected by the proposal shall, where feasible and reasonable, be rehabilitated to emulate a natural stream system. The rehabilitation of watercourses shall be consistent with the <i>Guidelines for Controlled Activities</i> (DWE, 2008) and stream armouring should be minimised to the greatest extent practicable.	Full compliance for both sub-stages	
C26	Riparian vegetation in and around watercourses affected by the SSI shall be restored and rehabilitated in consultation with NOW and DPI (Fisheries) and with the relevant Council/s. Restoration and rehabilitation measures, including timeframes and reporting on completion of works, shall be included in the Construction Flora and Fauna Management Plan (condition E34(f)).	Full compliance for both sub-stages	
<b>HERITAGE</b>			
C27	The Proponent shall prepare and implement a Visual Impact Strategy in consultation with the Department and the NSW Heritage Council to detail and minimise the visual impacts of the SSI on heritage items, including Glenhope, Inala School, Castle Hill Showground, Mungerie House and the former Swann Inn; and the rehabilitation of bushland associated with works at Epping.	Full compliance for both sub-stages	
C28	<p>During detailed design and construction of the SSI, impacts to heritage items shall, where feasible and reasonable, be avoided and minimised, under the guidance of an appropriately qualified heritage specialist.</p> <p>Where impacts identified in the EIS are unavoidable, works shall be undertaken in accordance with the strategy outlined in the Construction Heritage Management Plan (condition E34(e)).</p>	Full compliance for both sub-stages	
C29	Archival recording of affected heritage items shall be undertaken in accordance with the NSW Heritage Council guidelines as relevant.	Full compliance for both sub-stages using approved archival methodologies produced under SSI-5100	



ID	Undertaking	Stage 2a Surface and Viaduct Civils	Stage 2b Operations Trains and Systems
C30	<p>Prior to the commencement of pre-construction and/ or construction activities that will impact the Aboriginal archaeological sites identified in table 7.3 of the North West Rail Link EIS: Technical Paper - Indigenous Heritage, dated March 2012 and table 12.6 of the North West Rail Link EIS: Volume 1B – Environmental Impact Statement Stage 2 – Stations, Rail Infrastructure and Systems, the Proponent shall undertake an archaeological salvage program using a methodology prepared in consultation with the registered Aboriginal stakeholders, and to the satisfaction of the Director-General. This work shall be undertaken by an appropriately qualified archaeological heritage consultant.</p> <p>Within 2 years of completing the salvage, unless otherwise agreed by the Director General, the Proponent shall submit a report containing the findings of the salvage, including artefact analysis, and the identification of a final repository for any Aboriginal objects, prepared in consultation with the Aboriginal stakeholders and to the satisfaction of the Director-General.</p> <p>If the impacts or works to the Aboriginal archaeological sites identified in table 7.3 of the North West Rail Link EIS: Technical Paper – Indigenous Heritage, dated March 2012 have been addressed in accordance with Condition E9 of State Significant Infrastructure Approval SSI-5100, the requirements of this part of the condition are taken to be fulfilled.</p>	<p>Activities undertaken in accordance with condition E9 from SSI-5100 satisfy the requirements of SSI-5414. Subsequent to the Early Works Managing Contract TfNSW have retained this obligation..</p>	
C31	<p>Prior to the commencement of pre-construction and/ or construction activities that will impact the historical archaeological sites identified in identified in table 4.2 of the North West Rail Link EIS: Technical Paper – European Heritage, dated March 2012, the Proponent shall undertake an archaeological excavation program in accordance with the Heritage Council of NSW Archaeological Assessments Guideline (1996) using a methodology prepared in consultation with the Heritage Council of NSW, and to the satisfaction of the Director-General. This work shall be undertaken by an appropriately qualified archaeological heritage consultant.</p> <p>Within 2 years of completing the above work, unless otherwise agreed by the Director General, the Proponent shall submit a report containing the findings of the excavations, including artefact analysis, and the identification of a final repository for any finds, prepared in consultation with the Heritage Council of NSW and to the satisfaction of the Director-General.</p> <p>If the impacts or works have been addressed in accordance with Condition E10 of State Significant Infrastructure Approval SSI-5100, the requirements of this condition are taken to be fulfilled.</p>	<p>Activities undertaken in accordance with condition E10 from SSI-5100 satisfy the requirements of SSI-5414. Subsequent to the Early Works Managing Contract TfNSW have retained this obligation.</p>	
<b>SOIL, WATER QUALITY AND HYDROLOGY</b>			
C32	<p>Except as may be provided by an EPL, the SSI shall be constructed and operated to comply with section 120 of the <i>Protection of the Environment Operations Act 1997</i>, which prohibits the pollution of waters.</p>	<p>Full compliance for both sub-stages</p>	
<b>Flooding</b>			
C33	<p>The SSI shall be designed, to the extent that it is feasible and reasonable, to not worsen existing flood characteristics in the vicinity of the SSI. Not worsen is defined as:</p> <p>(a) a maximum increase flood levels of 50mm in a 100 year Average Recurrence Interval (ARI) flood event; and</p> <p>(b) a maximum increase in time of inundation of one hour in a 100 year ARI flood event; and</p> <p>(c) any increase in flow velocity in a 100 year ARI flood event should not increase the potential for soil erosion and scouring.</p>	<p>Full compliance for both sub-stages (TfNSW consider that the condition C7 of SSI-5100 is superseded by this condition)</p>	
<b>Flood Risk Management Plan</b>			
C34	<p>A Stormwater and Flooding Management Plan(s) shall be prepared in consultation with the Department (Strategies and Land Release), OEH, and relevant Councils during detailed design of the SSI and prior to construction, or as otherwise agreed by the Director General. The Plan shall identify actions to ensure that the SSI addresses existing flooding characteristics within the vicinity of the SSI for a full range of flood sizes up to and including the probable maximum flood. The Plan(s) shall be prepared by appropriately qualified person(s) and facilitate a holistic approach to detailed hydrologic assessment and stormwater management, which gives consideration to the cumulative impacts of the SSI associated with its construction and operation, and shall include but not be limited to:</p> <p>(a) the design of temporary works, compensatory and management measures that would be implemented during construction to not worsen, to the extent that it is feasible and reasonable, existing and known future flooding characteristics;</p> <p>(b) the identification of flood risks to the SSI and adjoining areas, including the consideration of local and regional drainage catchment assessments, strategies and guidelines; and climate change implications on rainfall and drainage characteristics;</p> <p>(c) the design and layout of each station precinct and rail service facility to not worsen, to the extent that is feasible and reasonable, existing and known future flooding characteristics;</p> <p>(d) identification of design and mitigation measures that would be implemented to protect proposed construction and operational activities and not worsen existing flooding characteristics, including soil erosion and scouring. Design of mitigation measures should consider more frequent floods besides flood of design; and</p> <p>(e) identify flood risk, potential for inflows, potential consequences and required mitigation measures for each tunnel entrance;</p> <p>(f) specific information related to flood risk in larger floods (for example PMF) and the incorporation of management measures in the flood emergency response planning required under condition F4.</p> <p>For surface components of the SSI located on floodplains, flood impacts shall be confirmed in accordance with the Floodplain Development Manual (2005), and other relevant NSW Government Guidelines.</p>	<p>Full compliance for both sub-stages</p>	
<b>Salinity</b>			

ID	Undertaking	Stage 2a Surface and Viaduct Civils	Stage 2b Operations Trains and Systems
C35	<p>A Soil Salinity Report detailing the outcomes of geotechnical investigations and groundwater monitoring, to determine the presence, extent and severity of soil salinity within the SSI area and impacts to groundwater resources and hydrology, shall be prepared and submitted to the Director General prior to the commencement of bulk earth activities, or as otherwise agreed by the Director General.</p> <p>The report shall be prepared in consultation with OEH and NOW and detail, where relevant, that the SSI minimises, avoids and/or mitigates impacts on local/regional salinity processes, impacts on groundwater systems, and receiving environments.</p> <p>The recommendations of the Soil Salinity Report shall be incorporated into the Construction Soil and Water Quality Management Plan (condition E34(c)).</p> <p>The Soil Salinity Report, prepared to meet condition C9 of State Significant Infrastructure approval SSI-5100, may be revised, if necessary and resubmitted.</p>	Full compliance using the Soil Salinity Report produced by ISJV under SSI-5100 for SSI-5414	Full compliance
<b>Watercourse crossings</b>			
C36	Watercourse crossings (temporary and permanent) shall be designed in consultation with NOW, and where feasible and reasonable, be consistent with the <i>Guidelines for Controlled Activities, Policy and Guidelines for Fish Friendly Waterway Crossings</i> (NSW Fisheries, 2004) and <i>Policy and Guidelines for Design and Construction of Bridges, Roads, Causeways, Culverts and Similar Structures</i> (NSW Fisheries, 1999). Where multiple cell culverts are proposed for creek crossings, at least one cell shall be provided for fish passage, with an invert or bed level that mimics creek flows.	Full compliance for both sub-stages	
<b>Water Quality Monitoring Program</b>			
C37	<p>A Water Quality Monitoring Program shall be prepared and implemented to monitor impacts on surface and groundwater quality resources and wetlands during construction and operation. The Program shall be developed in consultation with the EPA, DPI (Fisheries), NOW and relevant Councils and shall include but not necessarily be limited to:</p> <p>(a) identification of surface and groundwater quality monitoring locations which are representative of the potential extent of impacts from the SSI. This should include representative locations near the discharge point of the Lady Game Drive Water Treatment Plant;</p> <p>(b) identification of the water quality parameters to be monitored at each location;</p> <p>(c) identification of works and activities during construction and operation of the SSI, including emergencies and spill events, that have the potential to impact on surface water quality of potentially affected waterways;</p> <p>(d) presentation of parameters and standards against which any changes to water quality will be assessed, having regard to the principles of the Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 (ANZECC, 2000), and identification of 'trigger points' for further investigation or action to be taken;</p> <p>(e) representative background monitoring of surface and groundwater quality parameters, to establish baseline water conditions, unless otherwise agreed by the Director General;</p> <p>(f) identification of the frequency of water sampling during background, and construction monitoring periods;</p> <p>(g) a minimum monitoring period of three years following the completion of construction or until the affected waterways and/ or groundwater resources are certified by an independent expert as being rehabilitated to an acceptable condition;</p> <p>(h) contingency and ameliorative measures in the event that adverse impacts to water quality relevant to the SSI are identified; and</p> <p>(i) reporting of the monitoring results to the Department, EPA, DPI, NoW and relevant Councils.</p> <p>The Program shall be submitted to the Director General for approval prior to the commencement of construction of the SSI, or as otherwise agreed by the Director General. A copy of the Program shall be submitted to the EPA, DPI (Fishing and Aquaculture) and NOW prior to its implementation.</p> <p>The Water Quality Monitoring Program, prepared to meet condition C11 of State Significant Infrastructure approval SSI-5100, may be revised, if necessary and resubmitted.</p>	Full compliance the Water Quality Management Plan developed by ISJV for SSI-5100 will apply for SSI-5414.	Full compliance
<b>Groundwater</b>			
C38	The Proponent shall design and construct the SSI, as far as is feasible and reasonable, in a manner that minimises impacts to groundwater hydrology including capture, drawdown and quality.	Full compliance for both sub-stages	
C39	The Proponent shall take all feasible and reasonable measures to limit operational groundwater inflows into the tunnels to no greater than 0.5 ML/day.	Not applicable to this sub-stage	Full compliance
C40	The management of groundwater and surface water ingress into the station boxes and tunnels, including the design of capture, monitoring, treatment and discharge methods shall be undertaken in consultation with the EPA.	Not applicable to this sub-stage	Full compliance
C41	The Proponent shall ensure that groundwater which is treated at the Lady Game Drive water treatment plant is not discharged into the Lane Cove River without first meeting the discharge criteria outlined in Table 8.5 of the document referred to in condition B1(b). The Proponent shall review the discharge criteria in consultation with the EPA to ensure the level of discharge will not cause pollution of waters.	Not applicable to this sub-stage	Full compliance
<b>Contamination</b>			

ID	Undertaking	Stage 2a Surface and Viaduct Civils	Stage 2b Operations Trains and Systems
C42	<p>The following documents shall be submitted to the Director General, within the identified timeframes, unless otherwise agreed by the Director General:</p> <p>(a) reports detailing Stage 2 Contamination Site Investigations in areas identified as having a risk of contamination (soil, water and building materials), and a Site Auditor endorsed Remediation Action Plan (or similar), where required, prior to site preparation or construction; and</p> <p>(b) Certification by a Site Auditor that any contaminated land and/or groundwater, identified in (a) has been remediated to a standard consistent with the intended land use, prior to the use of the land.</p> <p>Note: Terms used in this condition have the same meaning as in the Contaminated Land Management Act 1997.</p>	Full compliance	
C43	<p>Where the investigations identify that the site is suitable for the intended operations and that there is no need for a specific remediation strategy, measures to identify, handle and manage potential contaminated spoils, materials and groundwater shall be incorporated into the Construction Environmental Management Plan (condition E33).</p>	Full compliance	
<b>URBAN DESIGN</b>			
C44	<p>The Proponent shall, prior to the commencement of permanent built works and/or landscaping, unless otherwise agreed by the Director-General, prepare and implement an Urban Design and Corridor Landscape Plan for the corresponding permanent built works and/or landscaping. The Plan shall be submitted to the Director-General and made publicly available.</p> <p>In preparing the Plan, the Proponent shall consult with the Department (Land Release), RMS, relevant Councils and the community.</p> <p>The Plan shall be prepared by appropriately qualified person(s) and detail the design initiatives to integrate rail infrastructure, stations and facilities into their existing and proposed settings, and landscaping measures to minimise, mitigate and/or offset the impacts of the SSI (including acoustic barriers and embankments/cuttings) on property and other land uses (such as open space), visual amenity and local vistas and heritage values. The Plan shall include, but not necessarily be limited to:</p> <p>(a) identification of design objectives and standards based on local environmental and heritage values, strategic and statutory planning, future land release form and function, sustainable design and maintenance, transport and land use integration, passenger and community safety and security, community amenity and privacy, and relevant design standards and guidelines;</p> <p>(b) details on the plans to provide, mitigate and/or augment landscaped areas and elements, with landscaping works to enhance ecological values, including riparian areas and fauna corridors, the provision of water sensitive urban design initiatives and to mitigate impacts to heritage landscapes;</p> <p>(c) design details of the built elements of the SSI, including retaining walls, embankments, viaducts, culverts, bridges and underpasses, noise barriers, train stabling facility, and substations, and the measures to minimise the impact of these elements, particularly with respect to the impacts on adjoining residences, educational facilities, open space areas and heritage items and landscapes, including the recommendations of the Visual Impact Strategy (condition C27);</p> <p>(d) specific plans for station precincts to provide high quality sustainable stations that enhance the public domain and provide for active uses, ensure intermodal integration and equitable and safe access, including connectivity of the stations to surrounding precincts and integration into strategic planning directions for these areas consistent with Station Access Plan(s) (condition C5);</p> <p>(e) details on pedestrian and cycle access elements and fixtures, including crossings, secure cycle facilities, and other fixtures such as seating, lighting, fencing and signs etc, to enhance connectivity and the provision of a safe and secure environment consistent with the Pedestrian and Cyclist Network Facilities Strategy (condition C10);</p> <p>(f) details on parking elements and how commuter parking areas at stations shall be designed to minimise amenity impacts and so as not to preclude or prejudice the future functionality of town centres consistent with the Parking Management Strategy (condition C11);</p> <p>(g) details on public art and heritage (indigenous and non-indigenous) interpretation installations;</p> <p>(h) implementation, management and monitoring strategies to ensure the establishment and ongoing maintenance of built elements and landscaped areas, including performance standards; and</p> <p>(i) consideration of relevant design standards, such as the Sustainable Design Guidelines for Stations, Commuter Car Parks and Maintenance Facilities (2011), Bridge Aesthetics Design guidelines to improve the appearance of bridges in NSW (2012), Guidelines for the Development of Public Transport Interchange Facilities (2008) and Crime Prevention Through Environmental Design Principles, and relevant Agency and Council design standards.</p> <p>The Plan shall be endorsed by an independent Design Review Panel. The Design Review Panel shall consist of appropriately skilled professionals in the fields of architecture, landscape design, transport integration and heritage. The Panel representatives shall be approved by the Director-General.</p>	Partial compliance. SVC contractor will not be required to comply with C44 (d-g).	Full compliance
<b>HAZARDS AND RISK</b>			
C45	<p>Dangerous goods, as defined by the Australian Dangerous Goods Code, shall be stored and handled strictly in accordance with:</p> <p>(a) all relevant Australian Standards;</p> <p>(b) for liquids, a minimum bund volume requirement of 110% of the volume of the largest single stored volume within the bund; and</p> <p>(c) the Environment Protection Manual for Authorised Officers: Bunding and Spill Management, technical bulletin (EPA, 1997).</p> <p>In the event of an inconsistency between the requirements listed from (a) to (c) above, the most stringent requirement shall prevail to the extent of the inconsistency.</p>	Full compliance for both sub-stages	
<b>WASTE MANAGEMENT</b>			



ID	Undertaking	Stage 2a Surface and Viaduct Civils	Stage 2b Operations Trains and Systems
C46	Waste generated outside the site shall not be received at the site for storage, treatment, processing, reprocessing, or disposal on the site, except as expressly permitted by a licence under the <i>Protection of the Environment Operations Act 1997</i> , if such a licence is required in relation to that waste.	Full compliance for both sub-stages	
<b>UTILITIES AND SERVICES</b>			
C47	Utilities, services and other infrastructure potentially affected by construction shall be identified prior to construction affecting the item, to determine requirements for access to, diversion, protection, and/or support. Consultation with the relevant owner and/or provider of services that are likely to be affected by the SSI shall be undertaken to make suitable arrangements for access to, diversion, protection, and/or support of the affected infrastructure as required. The Proponent shall ensure that disruption to any service is minimised and shall be responsible for advising local residents and businesses affected prior to any planned disruption of service.	Full compliance for both sub-stages	
C48	The Proponent shall prepare dilapidation surveys and reports (including movement prediction studies) on the condition of roads, footpaths, services and utilities affected by construction. The Proponent shall carry out rectification work at the Proponent's expense and to the reasonable requirements of the owners.	Full compliance for both sub-stages	
C49	All excavations adjacent to RMS road infrastructure shall meet the requirements of RMS Technical Direction GTD 2012/0001 " <i>Excavation adjacent to RMS infrastructure</i> ".	Full compliance for both sub-stages	
C50	The Proponent shall consult with relevant Councils regarding the use of any weight restricted road by heavy construction vehicles if required.	Full compliance for both sub-stages	
<b>CLIMATE CHANGE</b>			
C51	The Proponent shall, where feasible and reasonable, fully offset carbon emissions generated by the operation of the SSI.	Not applicable	Full compliance whereby TfNSW have retained the obligation for offsetting.
<b>SCHEDULE D</b>			
<b>COMMUNITY INFORMATION, REPORTING AND AUDITING</b>			
<b>COMMUNITY INFORMATION, CONSULTATION AND INVOLVEMENT</b>			
D1	<p>A Stakeholder and Community Involvement Plan shall be prepared and implemented to provide mechanisms to facilitate communication between the Proponent (and its contractor(s)), the Environmental Representative (condition E32), the relevant Council and community stakeholders (particularly adjoining landowners) on the construction environmental management of the SSI and detailed design elements of the SSI. The Strategy shall include, but not be limited to:</p> <p>(a) identification of community and business stakeholders to be consulted as part of the Strategy, including affected and adjoining landowners;</p> <p>(b) procedures and mechanisms for the regular distribution of information to community and business stakeholders on construction progress and matters associated with environmental management;</p> <p>(c) the formation of community/business-based forums that focus on key environmental management issues and design aspects of the SSI. The Strategy shall provide detail on the structure, scope, objectives and frequency of the forums;</p> <p>(d) procedures and mechanisms through which community and business stakeholders can discuss or provide feedback to the Proponent and/or Environmental Representative in relation to the environmental management, design and delivery of the SSI;</p> <p>(e) procedures and mechanisms through which the Proponent can respond to enquires or feedback from community and business stakeholders in relation to the environmental management, design and delivery of the SSI; and</p> <p>(f) procedures and mechanisms that would be implemented to resolve issues/ disputes that may arise between parties on the matters relating to environmental management, design and the delivery of the SSI. This may include the use of an appropriately qualified and experienced independent mediator.</p> <p>Issues that shall be addressed through the Stakeholder and Community Involvement Plan include (but are not necessarily limited to) traffic and access arrangements, noise and vibration, impacts to local businesses, land uses and community facilities, urban design and landscaping and other construction and design related impacts and management measures.</p> <p>The Proponent shall maintain and implement the Plan throughout construction of the SSI. The Plan shall be approved by the Director General prior to the commencement of construction, or as otherwise agreed by the Director General.</p>	The OSCIP prepared for SSI-5100 will be reviewed for application to SSI-5414 to ensure the scope within SSI-5414 is adequately addressed.	
<b>Complaints and Enquiries Procedure</b>			
D2	<p>Prior to the commencement of construction, or as otherwise agreed by the Director General, the Proponent shall ensure that the following are available for community enquiries and complaints for the duration of construction:</p> <p>(a) a 24 hour telephone number(s) on which complaints and enquiries about the SSI may be registered;</p> <p>(b) a postal address to which written complaints and enquires may be sent;</p> <p>(c) an email address to which electronic complaints and enquiries may be transmitted; and</p> <p>(d) a mediation system for complaints unable to be resolved.</p> <p>The telephone number, the postal address and the email address shall be published in newspaper(s) circulating in the local area prior to the commencement of construction. This information shall also be provided on the website (or dedicated pages) required by this approval.</p>	Full compliance for both sub-stages	

ID	Undertaking	Stage 2a Surface and Viaduct Civils	Stage 2b Operations Trains and Systems
D3	<p>Prior to the commencement of construction, or as otherwise agreed by the Director General, the Proponent shall prepare and implement a Construction Complaints Management System consistent with Customer satisfaction-Guidelines for complaints handling in organisations – ISO 10002:2004, MOD (formerly AS 4269: Complaints Handling) and maintain the System for the duration of construction and up to 12 months following completion of the SSI.</p> <p>Information on all complaints received, including the means by which they were addressed and whether resolution was reached, with or without mediation, shall be maintained in a complaints register and included in the construction compliance reports required by this approval. The information contained within the System shall be made available to the Director General on request.</p>	The CCMS prepared for SSI-5100 will be reviewed for application to SSI-5414 to ensure the scope within SSI-5414 is adequately addressed.	
<b>Provision of Electronic Information</b>			
D4	<p>Prior to the commencement of construction, or as otherwise agreed by the Director General, the Proponent shall establish and maintain a new website, or dedicated pages within an existing website, for the provision of electronic information associated with the SSI, for the duration of construction and for 12 months following completion of the SSI. The Proponent shall, subject to confidentiality, publish and maintain up-to-date information on the website or dedicated pages including, but not necessarily limited to:</p> <p>(a) information on the current implementation status of the SSI;</p> <p>(b) a copy of the documents referred to under condition B1 of this approval, and any documentation supporting modifications to this approval that may be granted from time to time;</p> <p>(c) a copy of this approval and any future modification to this approval;</p> <p>(d) a copy of each relevant environmental approval, licence or permit required and obtained in relation to the SSI;</p> <p>(e) a copy of each current strategy, plan, program or other document required under this approval;</p> <p>(f) the outcomes of compliance tracking in accordance with condition D5 of this approval; and</p> <p>(g) details of contact point(s) to which community complaints and enquiries may be directed, including a telephone number, a postal address and an email address.</p>	Full compliance for both sub-stages. TfNSW will maintain an overarching project website ( <a href="http://www.nwrail.transport.nsw.gov.au">http://www.nwrail.transport.nsw.gov.au</a> ), detailed contractor documentation will be maintained on their respective websites which will be linked to the project website.	
<b>COMPLIANCE MONITORING AND TRACKING</b>			
<b>Compliance Tracking Program</b>			
D5	<p>The Proponent shall develop and implement a Compliance Tracking Program to track compliance with the requirements of this approval. The Program shall be submitted to the Director General for approval prior to the commencement of construction and operate for a minimum of one year following commencement of operation. The Program shall include, but not necessarily be limited to:</p> <p>(a) provisions for the notification of the Director General prior to the commencement of construction of the SSI (including prior to each stage, where works are being staged);</p> <p>(b) provisions for periodic review of the compliance status of the SSI against the requirements of this approval;</p> <p>(c) provisions for periodic reporting of compliance status to the Director General, including a Pre-Construction Compliance Report, during construction reporting, and a Post-Construction Compliance Report;</p> <p>(d) a program for independent environmental auditing in accordance with ISO 19011:2003 - Guidelines for Quality and / or Environmental Management Systems Auditing;</p> <p>(e) mechanisms for recording environmental incidents during construction and actions taken in response to those incidents;</p> <p>(f) provisions for reporting environmental incidents to the Director General and relevant public authorities during construction;</p> <p>(g) procedures for rectifying any non-compliance identified during environmental auditing, review of compliance or incident management; and</p> <p>(h) provisions for ensuring all employees, contractors and sub-contractors are aware of, and comply with, the conditions of this approval relevant to their respective activities.</p>	Full compliance for both sub-stages. The CTP approved for SSI-5100 will be reviewed and updated to address the requirements of SSI-5414 and re-submitted as appropriate.	
<b>Incident Reporting</b>			
D6	The Proponent shall notify the Director General of an incident with significant off-site impacts on people or the biophysical environment as identified by the Environmental Representative within 48 hours of becoming aware of the incident. The Proponent shall provide full written details of the incident to the Director General within seven days of the date on which the incident occurred.	Full compliance for both sub-stages	
<b>SCHEDULE E</b>			
<b>CONSTRUCTION ENVIRONMENTAL MANAGEMENT</b>			
<b>TRANSPORT AND ACCESS</b>			

ID	Undertaking	Stage 2a Surface and Viaduct Civils	Stage 2b Operations Trains and Systems
E1	Where construction will impact the efficiency and safety of road and related transport networks (including traffic flow, access, bus routes, parking and user safety), the Proponent shall develop, assess, and implement appropriate management measures in consultation with the relevant road authority, transport operator(s), and emergency services, and adjoining major land holders, as relevant. Such measures shall be addressed in the Construction Traffic Management Plan (E34(c)) and shall include but not be limited to: (a) construction site access, including the efficient and safe egress and ingress of vehicles, consistent relevant Austroads, Australian Standards and RMS requirements; (b) parking management, including on and off street and remote parking and access; (c) heavy vehicle management, the restriction (unless otherwise approved) of heavy vehicles on certain routes (for example T-Ways and past education facilities) and the minimisation of heavy vehicle traffic in peak traffic periods; (d) bus rerouting and access to bus stops; (e) full and partial road closures and associated restrictions, detours and the like; (f) special event management; (g) the retention and reinstatement of emergency and property access; (h) the retention of user and passenger safety, including pedestrians, cyclists, public transport users, including at stops and related facilities; and (i) incident response planning.		Full compliance for both sub-stages
E2	Access to property shall be maintained during construction unless otherwise agreed with the property owner in advance. A landowner's access that is physically affected by the SSI shall be reinstated to at least an equivalent standard, in consultation with the property owner.		Full compliance for both sub-stages
E3	Impacts to existing parking (on and off street) should be minimised, including the amount of spaces reduced and the time associated with this reduction. Where parking is impacted, particularly for periods greater than four weeks, the proponent shall identify and implement, where feasible and reasonable, alternate parking arrangements. Displaced vehicles must not be accommodated on the state road network.		Full compliance for both sub-stages
E4	Without limiting the outcomes of the Construction Traffic Management Plan for the SSI, construction traffic shall be scheduled, where feasible and reasonable, to outside of AM and PM peak hours, and also during special events. Methods used to limit construction traffic outside of peak traffic periods shall be incorporated into the Construction Traffic Management Plan (E34(c)).		Full compliance for both sub-stages
<b>Road Dilapidation</b>			
E5	Upon determining heavy vehicle routes associated with the SSI, and prior to use of these route(s) by heavy vehicles, an independent and qualified person or team shall undertake a Road Dilapidation Report on local roads from the construction access/ egress point(s) to the arterial road network. The report shall assess the current condition of the road and describe mechanisms to restore any damage that may result due to traffic and transport related to the construction of the SSI, during construction. The Report shall be submitted to the relevant road authority for review prior to use of the haulage routes(s).  Following completion of construction, a subsequent report shall be prepared to assess any damage that may have resulted from the construction of the SSI.  Measures undertaken to restore or reinstate roads affected by the SSI shall be undertaken in a timely manner, in accordance with the reasonable requirements of the relevant road authority, and at the full expense of the Proponent.		Full compliance for both sub-stages
<b>Access</b>			
E6	Safe pedestrian and cyclist access through or around worksites shall be maintained during construction. In circumstances where pedestrian and cyclist access is restricted due to construction activities, a feasible and reasonable alternate route shall be provided and signposted.		Full compliance for both sub-stages
E7	Construction vehicles (including staff vehicles) associated with the SSI shall be managed to: (a) minimise parking or queuing on public roads and non associated sites; (b) minimise the use of local roads (through residential streets and town centres) to gain access to construction sites and compounds; (c) minimise traffic past schools and child care centres, particularly during opening and closing periods; and (d) adhere to the nominated heavy vehicle routes identified in the Construction Traffic Management Plan (E34(c)).		Full compliance for both sub-stages
<b>AIR QUALITY</b>			
E8	The SSI shall be constructed in a manner that minimises dust emissions from the site, including wind-blown and traffic-generated dust and tracking of material onto public roads. All activities on the site shall be undertaken with the objective of minimising visible emissions of dust from the site. Should such visible dust emissions occur at any time, the Proponent shall identify and implement all feasible and reasonable dust mitigation measures, including cessation of relevant works, as appropriate, such that emissions of visible dust cease.		Full compliance for both sub-stages
<b>VISUAL AMENITY</b>			
E9	The SSI shall be constructed in a manner that minimises visual impacts resulting from construction sites, including retaining, where feasible and reasonable, existing vegetation around the perimeter of construction sites, providing temporary landscaping where appropriate to soften views of the construction sites, minimising light spillage, and incorporating architectural treatment and finishes within key elements of temporary structures that reflect the context within which the construction sites are located.		Full compliance for both sub-stages
<b>BIODIVERSITY</b>			

ID	Undertaking	Stage 2a Surface and Viaduct Civils	Stage 2b Operations Trains and Systems
E10	The SSI shall be constructed with the objective of not clearing additional vegetation beyond that approved under State Significant Infrastructure Approval SSI 5100 or identified in the documents listed in Condition B1.	Full compliance for both sub-stages	
<b>REHABILITATION</b>			
E11	Where land associated with construction sites are not proposed to be utilised as part of the operational stage of the SSI, the Proponent shall ensure that these sites are fully rehabilitated to either the same level or better than their condition, prior to the construction of Infrastructure Approval SSI-5100, in consultation with relevant Council(s).	Full compliance for both sub-stages	
<b>NOISE AND VIBRATION</b>			
<b>Construction Hours</b>			
E12	Construction activities associated with the SSI shall be undertaken during the following standard construction hours: (a) 7:00am to 6:00pm Mondays to Fridays, inclusive; and (b) 8:00am to 1:00pm Saturdays; (c) at no time on Sundays or public holidays.	Full compliance for both sub-stages	
E13	Notwithstanding condition E12, track work, tunnel systems works and fit out works within the tunnel may be undertaken 24 hours, seven days a week.	Not applicable to this sub-stage	Full compliance
E14	Except as permitted by an EPL, activities resulting in impulsive or tonal noise emissions shall only be undertaken: (a) between the hours of 8:00 am to 5:00 pm Monday to Friday; (b) between the hours of 8:00 am to 1:00 pm Saturday; and (c) in continuous blocks not exceeding three hours each with a minimum respite from those activities and works of not less than one hour between each block.  For the purposes of this condition 'continuous' includes any period during which there is less than a one hour respite between ceasing and recommencing any of the work the subject of this condition.	Full compliance for both sub-stages	
E15	Notwithstanding conditions E12 to E14, construction activities outside of the prescribed construction hours may be undertaken in any of the following circumstances: (a) construction works that generate air-borne noise that is: (i) no more than 5 dB(A) above rating background level at any residence in accordance with the ICNG; (ii) no more than the noise management levels specified in Table 3 of the ICNG at other sensitive receivers; (b) construction works that generate continuous or impulsive vibration values, measured at the most affected residence, that are no more than those for human exposure to vibration, specified for residences in Table 2.2 of Assessing Vibration: a technical guideline (DEC, 2006); (c) works that generate intermittent vibration values, measured at the most affected residence, that are no more than those for human exposure to vibration, specified for residences in Table 2.4 of Assessing Vibration: a technical guideline (DEC, 2006); (d) where a negotiated agreement has been reached with affected receivers, where the prescribed noise and vibration levels can not be achieved; (e) for the delivery of materials required outside these hours by the NSW Police Force or other authorities for safety reasons; (f) where it is required in an emergency to avoid the loss of lives, property and/or to prevent environmental harm; and (g) works approved through an EPL, including for works identified in an out of hours procedure.	Full compliance for both sub-stages	
E16	In relation to construction hours, including for standard and out of hours activities, the SSI shall be constructed to comply with an EPL applying to the SSI, including all relevant noise mitigation and management measures. In the event of a dispute between the Proponent (including its contractors) and the EPA, in relation to construction hours, either party may refer the matter to the Director-General for resolution.	Full compliance for both sub-stages	
E17	For any section of construction where blasting is proposed, a series of initial trials at reduced scale shall be conducted prior to production blasting to determine site-specific blast response characteristics and to define allowable blast sizes to meet the air blast overpressure and ground vibration limits in this approval.	Full compliance for both sub-stage, however no blasting is envisaged to occur for either contract.s	
<b>Construction Noise and Vibration</b>			
E18	The SSI shall be constructed with the aim of achieving the construction noise management levels detailed in the ICNG. All feasible and reasonable noise mitigation measures shall be implemented and any activities that could exceed the construction noise management levels shall be identified and managed in accordance with the Construction Noise and Vibration Management Plan (E34(b)).  Note: The ICNG identifies 'particularly annoying' activities that require the addition of 5dB(A) to the predicted level before comparing to the construction Noise Management Levels.	Full compliance for both sub-stages	

ID	Undertaking	Stage 2a Surface and Viaduct Civils	Stage 2b Operations Trains and Systems
E19	The SSI shall be constructed with the aim of achieving the following construction vibration goals: (a) for structural damage, the vibration limits set out in the German Standard DIN 4150-3: Structural Vibration - effects of vibration on structures; and (b) for human exposure, the acceptable vibration values set out in the Assessing Vibration: a Technical Guideline (DEC, 2006).  Where vibration levels exceed the acceptable vibration dose values, feasible and reasonable mitigation measures shall be considered.	Full compliance for both sub-stages	
E20	Ground vibration generated by blasting associated with the SSI shall not exceed the criteria specified in Table 3 when measured at the most affected receiver.  <b>Table 3 – Ground vibration criteria</b> (Table not included)  These criteria do not apply if the Proponent has a written agreement with the relevant owner, and has advised the Department in writing of the terms of this agreement.	Full compliance for both sub-stages	
E21	Wherever feasible and reasonable, piling activities shall be undertaken using quieter alternative methods than impact or percussion piling, such as bored piles or vibrated piles.	Full compliance for both sub-stages	
E22	The Proponent shall identify and consult with potentially-affected community, religious, educational institutions and vibration-sensitive businesses and critical working areas (such as theatres, laboratories and operating theatres) and where feasible and reasonable ensure that noise generating construction works in the vicinity of the receivers are not timetabled during sensitive periods, unless appropriate other arrangements are made.	Full compliance for both sub-stages	
E23	During construction, Proponent's of other construction works in the vicinity of the SSI shall be consulted, and reasonable steps taken to coordinate works to minimise impacts on, and maximise respite for, affected sensitive receivers.	Full compliance for both sub-stages	
<b>PROPERTY AND BUSINESS IMPACTS</b>			
E24	The Proponent shall design and construct the SSI with the objective of minimising impacts to, and interference with, third party property and infrastructure, and that such infrastructure and property is protected during construction and operation.	Full compliance for both sub-stages	
E25	Any damage caused to property as a result of the SSI shall be rectified or the property owner compensated, within a reasonable timeframe, with the costs borne by the Proponent. This condition is not intended to limit any claims that the property owner may have against the Proponent.	Full compliance for both sub-stages	
<b>Business Impacts</b>			
E26	The Proponent shall prepare and implement a Business Management Plan to minimise impacts on business adjacent to major construction sites and activities during construction of the SSI. The Plan shall include measures to minimise business related impacts, maintain where feasible and reasonable vehicular and pedestrian access during business hours, and the maintenance of visibility of the business appropriate to its reliance on such. The Plan shall include, but not necessarily be limited to: (a) a Business Consultation forum linked with the Community Construction Strategy as required by condition D1; (b) Business Management Strategies for each construction site (and/ or activity), identifying affected businesses and associated management strategies, including the employment of place managers and specific measures to be put in place to assist small business owners adversely impacted by the construction of the SSI; (c) a monitoring program to assess the effectiveness of the measures including the nomination of performance parameters and criteria against which effectiveness of the measures will be measured; and (d) provision for reporting of monitoring results to the Director General, as part of the Compliance Tracking Program (condition D5).	Full compliance using the Business Management Plan produced by ISJV under SSI-5100 for SSI-5414	Full compliance
<b>SOIL, WATER QUALITY AND HYDROLOGY</b>			
<b>Construction Soil and Water Management</b>			
E27	Soil and water management measures consistent with <i>Managing Urban Stormwater - Soils and Construction Vols 1 and 2, 4th Edition</i> (Landcom, 2004) shall be employed during the construction of the SSI to minimise soil erosion and the discharge of sediment and other pollutants to land and/or waters.	Full compliance for both sub-stages	
E28	Where available, and of appropriate chemical and biological quality, subject to a health risk assessment, stormwater, recycled water, groundwater inflows to tunnels or other water sources shall be used in preference to potable water for construction activities, including concrete mixing and dust control.	Full compliance for both sub-stages	
<b>LANDUSE AND COMMUNITY FACILITIES</b>			
E29	Where community and Council facilities are impacted during construction works through temporary or permanent land acquisition, reduced amenity, reduced access, reduced functionality or other impact, the Proponent shall, in consultation with the relevant Council, community groups and key stakeholders, address construction impacts and agree on feasible and reasonable mitigation, management and rehabilitation measures. Where appropriate, the Proponent shall determine viable alternative options for community facilities during the construction phase. Mitigation and management measures shall be implemented, prior to impacts occurring.	Full compliance for both sub-stages	
<b>ANCILLARY FACILITIES</b>			



ID	Undertaking	Stage 2a Surface and Viaduct Civils	Stage 2b Operations Trains and Systems
E30	<p>Unless otherwise approved by the Director General, the location of Ancillary Facilities shall:</p> <ul style="list-style-type: none"> <li>(a) be located more than 50 metres from a waterway;</li> <li>(b) be located within or adjacent to land where the SSI is being carried out;</li> <li>(c) have ready access to the road network;</li> <li>(d) be located to minimise the need for heavy vehicles to travel through residential areas;</li> <li>(e) be sited on relatively level land;</li> <li>(f) be separated from nearest residences by at least 200 metres (or at least 300 metres for a temporary batching plant);</li> <li>(g) not require vegetation clearing beyond that already required by the SSI;</li> <li>(h) not impact on heritage items (including areas of archaeological sensitivity) beyond those already impacted by the SSI;</li> <li>(i) not unreasonably affect the land use of adjacent properties;</li> <li>(j) be above the 20 ARI flood level unless a contingency plan to manage flooding is prepared and implemented; and</li> <li>(k) provide sufficient area for the storage of raw materials to minimise, to the greatest extent practical, the number of deliveries required outside standard construction hours.</li> </ul> <p>The location of the ancillary facilities shall be identified in the Construction Environmental Management Plan (E34) and include consideration of the above criteria. Where the above criteria cannot be met for any proposed ancillary facility, the Proponent shall demonstrate to the satisfaction of the Director General that there will be no significant adverse impact from that facility's construction or operation. Such assessment(s) can be submitted separately or as part of the Construction Environmental Management Plan.</p>	Full compliance for both sub-stages	
E31	All Ancillary Facilities shall be rehabilitated to at least their pre-construction condition, unless otherwise agreed by the landowner where relevant.	Full compliance for both sub-stages	
<b>ENVIRONMENTAL REPRESENTATIVE</b>			
E32	<p>Prior to the commencement of construction of the SSI, or as otherwise agreed by the Director General, the Proponent shall nominate for the approval of the Director General a suitably qualified and experienced Environment Representative(s) that is independent of the design and construction personnel. The Proponent shall employ the Environment Representative(s) for the duration of construction, or as otherwise agreed by the Director General. The Environment Representative(s) shall:</p> <ul style="list-style-type: none"> <li>(a) be the principal point of advice in relation to the environmental performance of the SSI;</li> <li>(b) monitor the implementation of environmental management plans and monitoring programs required under this approval and advise the Proponent upon the achievement of these plans/ programs;</li> <li>(c) have responsibility for considering and advising the Proponent on matters specified in the conditions of this approval, and other licences and approvals related to the environmental performance and impacts of the SSI;</li> <li>(d) ensure that environmental auditing is undertaken in accordance with the Proponent's Environmental Management System(s);</li> <li>(e) be given the authority to approve/ reject minor amendments to the Construction Environment Management Plan. What constitutes a "minor" amendment shall be clearly explained in the Construction Environment Management Plan (condition E33);</li> <li>(f) be present on site during certain activities that could result in potential adverse environmental impacts such as dewatering activities. If the ER is unable to attend then as a minimum, he/she should review the assessment and plans of proposed works prior to commencement of these works on site;</li> <li>(g) be given the authority and independence to advise on reasonable steps be taken to avoid or minimise unintended or adverse environmental impacts; and</li> <li>(h) be consulted in responding to the community concerning the environmental performance of the SSI where the resolution of points of conflict between the Proponent and the community is required.</li> </ul>	Full compliance for both sub-stages lead by TfNSW	
<b>CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN</b>			

ID	Undertaking	Stage 2a Surface and Viaduct Civils	Stage 2b Operations Trains and Systems
E33	<p>Prior to the commencement of construction, or as otherwise agreed by the Director General, the Proponent shall prepare and implement (following approval) a Construction Environmental Management Plan for the SSI. The Plan shall outline the environmental management practices and procedures that are to be followed during construction, and shall be prepared in consultation with the relevant government agencies and in accordance with the Guideline for the Preparation of Environmental Management Plans (DIPNR, 2004). The Plan shall include, but not necessarily be limited to:</p> <ul style="list-style-type: none"> <li>(a) a description of activities to be undertaken during construction of the SSI (including staging and scheduling);</li> <li>(b) statutory and other obligations that the Proponent is required to fulfil during construction, including approvals, consultations and agreements required from authorities and other stakeholders under key legislation and policies;</li> <li>(c) a description of the roles and responsibilities for relevant employees involved in the construction of the SSI, including relevant training and induction provisions for ensuring that employees, including contractors and sub-contractors are aware of their environmental and compliance obligations under these conditions of approval;</li> <li>(d) an environmental risk analysis to identify the key environmental performance issues associated with the construction phase; and</li> <li>(e) details of how environmental performance would be managed and monitored to meet acceptable outcomes, including what actions will be taken to address identified potential adverse environmental impacts (including any impacts arising from the staging of the construction of the SSI). In particular, the following environmental performance issues shall be addressed in the Plan: <ul style="list-style-type: none"> <li>(i) ancillary facilities management;</li> <li>(ii) noise and vibration;</li> <li>(iii) traffic and access;</li> <li>(iv) soil and water quality;</li> <li>(v) groundwater management and discharge;</li> <li>(vi) air quality and dust management;</li> <li>(vii) visual amenity;</li> <li>(viii) management of Aboriginal and historic heritage;</li> <li>(ix) soil contamination, groundwater contamination, hazardous material and waste management;</li> <li>(x) management of ecological impacts; and</li> <li>(xi) hazard and risk management.</li> </ul> </li> </ul> <p>The Plan shall be submitted for the approval of the Director General no later than one month prior to the commencement of construction, or as otherwise agreed by the Director General. The Plan may be prepared in stages, however, construction works shall not commence until written approval has been received from the Director General.</p> <p>Note: The approval of a Construction Environmental Management Plan does not relieve the Proponent of any requirement associated with this SSI approval. If there is an inconsistency with an approved Construction Environmental Management Plan and the conditions of this SSI approval, the requirements of this SSI approval prevail.</p>	Full compliance for both sub-stages	Full compliance for both sub-stages
E34	<p>As part of the Construction Environmental Management Plan for the SSI required under condition E33, the Proponent shall prepare and implement:</p> <ul style="list-style-type: none"> <li>(a) a Construction Compound and Ancillary Facilities Management Plan to detail the management of Ancillary Facilities associated with the SSI. The Plan shall include but not be limited to: <ul style="list-style-type: none"> <li>(i) a description of the facility, its components and the surrounding environment;</li> <li>(ii) details of the activities to be carried out at each facility, including the hours of use and the storage of dangerous and hazardous goods;</li> <li>(iii) an assessment against the locational criteria outlined in condition E30;</li> <li>(iv) details of the mitigation and management procedures specific to the facility that would be implemented to minimise environmental and amenity impacts and an assessment of the adequacy of the mitigation or offsetting measures;</li> <li>(v) identification of the timing for the completion of activities at the facility and how the site will be decommissioned (including any necessary rehabilitation); and</li> <li>(vi) mechanisms for the monitoring, review and amendment of this Plan.</li> </ul> </li> </ul>		

ID	Undertaking	Stage 2a Surface and Viaduct Civils	Stage 2b Operations Trains and Systems
	<p>(b) a <b>Construction Noise and Vibration Management Plan</b> to detail how construction noise and vibration impacts will be minimised and managed. The Plan shall be consistent with the guidelines contained in the Interim Construction Noise Guidelines (DECC, 2009) and Assessing Vibration: a technical guide (DEC, 2006). The plan shall be developed in consultation with the EPA and shall include, but not be limited to:</p> <ul style="list-style-type: none"> <li>(i) identification of work areas, site compounds and access points;</li> <li>(ii) identification of sensitive receivers and relevant construction noise and vibration goals applicable to the SSI stipulated in this approval;</li> <li>(iii) details of construction activities and an indicative schedule for construction works, including the identification of key noise and/or vibration generating construction activities (based on representative construction scenarios, including at ancillary facilities) that have the potential to generate noise and/or vibration impacts on surrounding sensitive receivers, particularly residential areas;</li> <li>(iv) identification of feasible and reasonable measures proposed to be implemented to minimise and manage construction noise impacts (including construction traffic noise impacts), including, but not limited to, acoustic enclosures, erection of noise walls (hoardings), respite periods and the limiting of truck movements during night periods;</li> <li>(v) identification of feasible and reasonable procedures and mitigation measures to ensure relevant vibration and blasting criteria are achieved, including a suitable blast program, applicable buffer distances for vibration intensive works, use of low-vibration generating equipment/ vibration dampeners or alternative construction methodology, and pre- and post- construction dilapidation surveys of sensitive structures where blasting and/or vibration is likely to result in damage to buildings and structures (including surveys being undertaken immediately following a monitored exceedance of the criteria);</li> <li>(vi) if blasting is required, an assessment of the potential noise and vibration impacts, and a strategy to minimise and manage those impacts, including preparation of an appropriate community information program;</li> <li>(vii) a description of how the effectiveness of mitigation and management measures would be monitored during the proposed works, clearly indicating how often this monitoring would be conducted, the locations where monitoring would take place, how the results of this monitoring would be recorded and reported, and, if any exceedance is detected, how any non-compliance would be rectified; and</li> <li>(viii) mechanisms for the monitoring, review and amendment of this plan.</li> </ul>		
	<p>(c) A <b>Construction Traffic Management Plan</b> to manage construction traffic and transport access impacts of the SSI. The plan shall be developed in consultation with and meet the reasonable requirements of the relevant road authority and transport operator(s), and shall include but not be necessarily limited to:</p> <ul style="list-style-type: none"> <li>(i) a traffic route management plan that identifies: <ul style="list-style-type: none"> <li>i. traffic generation from other major infrastructure developments;</li> <li>ii. construction traffic and heavy routes and associated traffic impacts,</li> <li>iii. types and volumes of construction vehicles and associated route and time restrictions, including details of oversized load movements,</li> <li>iv. potential traffic disruptions and temporary and permanent detours,</li> <li>v. traffic noise impacts, sensitive receivers and times of the day;</li> <li>vi. management, mitigation and restoration measures;</li> </ul> </li> <li>(ii) a parking management plan that identifies: <ul style="list-style-type: none"> <li>i. parking requirements and on and offsite parking arrangements and associated impacts,</li> <li>ii. remote parking arrangements and associated access between sites and public transport nodes,</li> <li>iii. alternate parking arrangements for displaced parking,</li> <li>iv. communication and parking management measures;</li> </ul> </li> <li>(iii) site traffic and access management plans that detail: <ul style="list-style-type: none"> <li>i. site access and associated route and turning movements and the design and signalisation of intersections,</li> <li>ii. potential activities that could result in the disruption to traffic and transport networks, including pedestrian, cyclist and public transport networks and during special events,</li> <li>iii. the timing of works to limit disruptions to the road and transport networks,</li> <li>iv. the maintenance of access to and safety of transport networks, parking and property,</li> <li>v. service facilities and station sites, and other locations identified by the relevant road authority or transport operator,</li> </ul> </li> <li>(iv) an incident response plan detailing responses to the management of an event that directly involves or impacts on traffic and transport networks; and</li> <li>(v) mechanisms for the monitoring, review and amendment of this plan.</li> </ul>		



ID	Undertaking	Stage 2a Surface and Viaduct Civils	Stage 2b Operations Trains and Systems
	<p>(d) A <b>Construction Soil and Water Management Plan</b> to manage soil surface and groundwater impacts during construction of the SSI. The plan shall be developed in consultation with the EPA and NOW and include, but not necessarily be limited to:</p> <ul style="list-style-type: none"> <li>(i) details of construction activities and their locations, which have the potential to impact on water courses, storage facilities, stormwater flows, and groundwater;</li> <li>(ii) details of proposed extraction, use and disposal of groundwater, and measures to mitigate potential impacts to groundwater sources, incorporating monitoring, impact trigger definition and response actions for all groundwater sources potentially impacted by the SSI;</li> <li>(iii) surface water and ground water impact assessment criteria consistent with the principles of the Australian and New Zealand Environment Conservation Council (ANZECC) guidelines;</li> <li>(iv) management measures to be used to minimise surface and groundwater impacts, including identification of water treatment measures and discharge points, details of how spoil and fill material required by the SSI will be sourced, handled, stockpiled, reused and managed; erosion and sediment control measures; salinity control measures and the consideration of flood events;</li> <li>(v) a contingency plan, consistent with the Acid Sulfate Soils Manual, to deal with the unexpected discovery of actual or potential acid sulfate soils, including procedures for the investigation, handling, treatment and management of such soils and water seepage;</li> <li>(vi) management measures for contaminated material (soils, water and building materials) and a contingency plan to be implemented in the case of unanticipated discovery of contaminated material, including asbestos, during construction;</li> <li>(vii) a description of how the effectiveness of these actions and measures would be monitored during the proposed works, clearly indicating how often this monitoring would be undertaken, the locations where monitoring would take place, how the results of the monitoring would be recorded and reported, and, if any exceedance of the criteria is detected how any non-compliance can be rectified; and</li> <li>(viii) mechanisms for the monitoring, review and amendment of this plan.</li> </ul>		
	<p>(e) a <b>Construction Heritage Management Plan</b> to detail how construction impacts on Aboriginal and Historic heritage will be minimised and managed. The plan shall include, but not necessarily be limited to:</p> <ul style="list-style-type: none"> <li>(i) In relation to Aboriginal Heritage: <ul style="list-style-type: none"> <li>I. developed in consultation with registered Aboriginal stakeholders;</li> <li>II. details of further investigation and identification of Aboriginal cultural heritage sites impacted by and within the construction areas except where the requirements of condition C30 have been met;</li> <li>III. details of management measures to be carried out in relation to Aboriginal heritage, including a detailed methodology and strategies for protection, monitoring, salvage, and conservation, of sites and items associated with the SSI and the long term storage and curation of any Aboriginal objects recovered in accordance the section 85A of the National Parks and Wildlife Act;</li> <li>IV. procedures for dealing with previously unidentified Aboriginal objects (excluding human remains) including cessation of works in the vicinity, assessment of the significance of the item(s) and determination of appropriate mitigation measures including when works can re-commence by a suitably qualified archaeologist in consultation with the Department, OEH and registered Aboriginal stakeholders and assessment of the consistency of any new Aboriginal heritage impacts against the approved impacts of the SSI, and registering of the new site in the OEH’s Aboriginal Heritage Information Management System (AHIMS) register; and</li> <li>V. procedures for ongoing Aboriginal consultation and involvement for the duration of the SSI; and</li> </ul> </li> <li>(ii) In relation to Historic Heritage: <ul style="list-style-type: none"> <li>I. developed in consultation with the NSW Heritage Council;</li> <li>II. identification of Heritage Items directly and indirectly affected by the SSI;</li> <li>III. details of management measures to be implemented to prevent and minimise impacts on heritage items (including further heritage investigations, archival recordings and/ or measures to protect unaffected sites during construction works in the vicinity);</li> <li>IV. details on how the recommendations identified in the North West Rail Link EIS: Technical Paper – European Heritage, prepared by Godden Mackay Logan, dated March 2012 will be implemented, including archaeological research designs for all archaeological sites except where the requirements of condition C31 have been met;</li> <li>V. a detailed plan for the implementation of any measures resulting from further investigations associated with potentially affected heritage items, including Glenhope, Inala School, Windsor Road and Old Windsor Road, and Mungerie House;</li> <li>VI. details of monitoring and reporting requirements for impacts on heritage items; and</li> <li>VII. procedures for dealing with previously unidentified relics, (including cessation of works in the vicinity, assessment of the significance of the item(s) and determination of appropriate mitigation measures including when works can re-commence by a suitably qualified and experienced archaeologist in consultation with the OEH and the Department, and assessment of the consistency of any new heritage impacts against the approved impacts of the SSI..</li> </ul> </li> <li>(iii) heritage training and induction processes for construction personnel (including procedures for keeping records of inductions) and obligations under the conditions of this approval including site identification, protection and conservation of Aboriginal and historic heritage;</li> <li>(iv) procedures for dealing with human remains, including cessation of works in the vicinity and notification of the Department, NSW Police Force, OEH and registered Aboriginal stakeholders and not recommencing any works in the area unless authorised by the NSW Police Force and/ or the Department; and</li> <li>(v) mechanisms for the monitoring, review and amendment of this plan.</li> </ul>		

ID	Undertaking	Stage 2a Surface and Viaduct Civils	Stage 2b Operations Trains and Systems
	<p>(f) a <b>Construction Flora and Fauna Management Plan</b> to detail how construction impacts on ecology will be minimised and managed. The Plan shall be developed in consultation with the OEH and relevant Councils and shall include, but not necessarily be limited to:</p> <ul style="list-style-type: none"> <li>(i) plans for impacted and adjoining areas showing vegetation communities; important flora and fauna habitat areas; locations where threatened species, populations or ecological communities have been recorded;</li> <li>(ii) vegetation management plan(s) for sites where vegetation is proposed to be retained and for reaches of riparian zones, which intersect with the construction footprint;</li> <li>(iii) identification of measures to reduce disturbance to bats and nocturnal birds (and other sensitive fauna);</li> <li>(iv) rehabilitation details, including identification of flora species and sources, and measures for the management and maintenance of rehabilitated areas (including duration of the implementation of such measures);</li> <li>(v) weed management measures focusing on early identification of invasive weeds and effective management controls;</li> <li>(vi) a description of how the effectiveness of these management measures would be monitored and linked to the Ecological Monitoring Program (condition C23);</li> <li>(vii) a procedure for dealing with unexpected EEC/ threatened species identified during construction, including cessation of work and notification of the Department, determination of appropriate mitigation measures in consultation with the OEH (including relevant re-location measures) and updating of ecological monitoring and/ or biodiversity offset requirements; and</li> <li>(viii) mechanisms for the monitoring, review and amendment of this plan.</li> </ul> <p>(g) a <b>Construction Air Quality Management Plan</b> to detail how construction impacts on air quality will be minimised and managed. The Plan shall include, but not necessarily be limited to:</p> <ul style="list-style-type: none"> <li>(i) the identification of potential sources of air pollutants of concern, in particular dust and PM10;</li> <li>(ii) air quality management objectives;</li> <li>(iii) mitigation measures to be implemented, including measures during adverse weather conditions (such as strong winds in dry weather);</li> <li>(iv) a monitoring program to assess compliance with the identified objectives;</li> <li>(v) mechanisms for the monitoring, review and amendment of this plan.</li> </ul>		
<b>SCHEDULE F</b>			
<b>OPERATIONAL ENVIRONMENTAL MANAGEMENT</b>			
<b>OPERATIONAL PERFORMANCE</b>			
<b>Maintenance</b>			
F1	The ongoing maintenance and operation costs of urban design and landscaping items and works implemented as part of this infrastructure approval shall remain the Proponent's responsibility until satisfactory arrangements have been put in place for the transfer of the asset to the relevant entity. Prior to the transfer of assets, the Proponent will maintain items and works to the design standards established in the Urban Design and Landscape Plan required by condition C44.	Not applicable to this sub-stage	Full compliance
<b>Operation Performance Audit Report</b>			
F2	Within fifteen months of the completion of construction, or as otherwise agreed by the Director General, the Proponent shall commission an independent qualified person or team to undertake an Operational Performance Audit of the SSI. The independent person or team shall be approved by the Director General prior to the commencement of the Audit. The Operational Performance Audit Report shall be submitted to the Director General within one month of the completion of the Audit, unless otherwise agreed by the Director General. The Audit shall:	Not applicable to this sub-stage	Full compliance
<b>Traffic monitoring</b>			
F3	Traffic changes on local roads around each station shall be monitored. Monitoring shall be undertaken 12 months before opening and for a period of no less than 12 months after opening. Should monitoring indicate unacceptable traffic intrusion on local roads/streets as a result of SSI operation reasonably beyond that predicted in the EIS and/or Station Access Plans (condition C5), appropriate traffic management measures to mitigate the impacts of intrusive traffic in affected areas shall be implemented following consultation with the RMS and the relevant Council(s).	Not applicable to this sub-stage	Full compliance
<b>OPERATIONAL ENVIRONMENTAL MANAGEMENT</b>			

ID	Undertaking	Stage 2a Surface and Viaduct Civils	Stage 2b Operations Trains and Systems
F4	<p>Prior to the commencement of operation, or as otherwise agreed by the Director General, the Proponent shall prepare and implement (following approval) an Operation Environmental Management Plan for the SSI. The Plan shall outline the environmental management practices and procedures that are to be followed during operation, and shall be prepared in consultation with relevant agencies and in accordance with the Guideline for the Preparation of Environmental Management Plans (Department of Infrastructure, Planning and Natural Resources, 2004). The Plan shall include, but not necessarily be limited to:</p> <ul style="list-style-type: none"> <li>(a) a description of activities to be undertaken during operation of the SSI (including staging and scheduling);</li> <li>(b) statutory and other obligations that the Proponent is required to fulfil during operation, including approvals, consultations and agreements required from authorities and other stakeholders under key legislation and policies;</li> <li>(c) overall environmental policies, guidelines and principles to be applied to the operation of the SSI;</li> <li>(d) a description of the roles and responsibilities for relevant employees involved in the operation of the SSI, including relevant training and induction provisions for ensuring that employees are aware of their environmental and compliance obligations under these conditions of approval;</li> <li>(e) an environmental risk analysis to identify the key environmental performance issues associated with the operation phase; and</li> <li>(f) details of how environmental performance would be managed and monitored to meet acceptable outcomes, including what actions will be taken to address identified potential adverse environmental impacts, including those safeguards and mitigation measures detailed in the documents listed under condition B1 (and any impacts arising from the staging of the construction of the SSI). In particular, the following environmental performance issues shall be addressed in the Plan: <ul style="list-style-type: none"> <li>(i) traffic and transport;</li> <li>(ii) noise and vibration;</li> <li>(iii) ecology;</li> <li>(iv) visual amenity and landscaping (including in relation to heritage);</li> <li>(v) climate change and energy use;</li> <li>(vi) surface water (including quality) and flooding (including emergency response planning);</li> <li>(vii) soils and groundwater management and discharge;</li> <li>(viii) waste and resource management; and</li> <li>(ix) air quality.</li> </ul> </li> </ul> <p>The Plan shall be provided to the Director General and made publicly available prior to operation.</p>	Not applicable to this sub-stage	Full compliance

**A.2 Schedule of Management and Mitigation Measures against Stages 1a, 1b and 1c.**

ID	Mitigation Measure	Site	Stage 2a - Station and Viaduct Civils	Stage 2b - Operations Trains and Systems
Soils and groundwater				
Operation				
OpSG1	A post construction monitoring program for ground movement and groundwater levels would be established for the land slip area near Cherrybrook Station.	Cherrybrook Station	NA	Full Compliance
OpSG2	Procedures to quickly address any contaminant spill or accident would be developed and implemented during operation of the station sites.	All	NA	Full Compliance
OpSG3	Groundwater quality would be subject to testing. Where it does not meet license requirements it would be treated prior to discharge.	All	NA	Full Compliance
OpSG4	Water treatment of captured groundwater from NWRL is to be treated at the existing water treatment plant located at Lady Game Drive, Lindfield. The incremental increase in volume from the NWRL would be accommodated within the existing capacity of the ECRL facility as long as water quality criteria can be met.	Tunnels	NA	Full Compliance
OpSG5	All feasible and reasonable opportunities would be identified for the reuse of captured groundwater.	Tunnels	NA	Full Compliance
Construction				
SG11	Any contaminated areas directly affected by the project would be investigated and remediated prior to the commencement of construction works. All remediation works would be undertaken in accordance with the requirements of the Contaminated Land Management Act 1997 and Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites (EPA, 1997b).	All	Full Compliance	Full Compliance
SG12	Prior to the commencement of site preparation or construction in potentially contaminated areas, a summary of soil contamination would be prepared detailing the outcomes of the Stage 2 contamination site investigations. The summary would detail, where relevant, whether or not the soil is suitable for the intended land use or can be made suitable for reuse through the application of a Remediation Action Plan (or similar).	All	Full Compliance	Full Compliance
SG13	An accredited Site Auditor would endorse the documentation of site contamination and any Remediation Action Plan or similar.	All	Full Compliance	Full Compliance
SG14	In the event of discovery of previously unidentified area(s) of potentially contaminated material, all work would cease in the vicinity of the discovery and not recommence until the extent of contamination has been assessed and if necessary, a Remediation Action Plan or similar has been prepared and endorsed by an accredited Site Auditor.	All	Full Compliance	Full Compliance
SG15	A Site Auditor would be required to certify that any contaminated areas have been remediated to a standard consistent with the intended land use prior to operation of the remediated site(s).	All	Full Compliance	Full Compliance
SG16	Bunds around fuel depots and stockpile areas would be installed to minimise the risk of contaminants reaching the water table.	All	Full Compliance	Full Compliance
Groundwater Management				
SG17	A groundwater monitoring plan would be prepared for the duration of the construction period. Parameters to be monitored would include groundwater levels and groundwater quality with field parameters, laboratory parameters and sample frequency to be developed prior to construction.	All	Partial Compliance – Only to the extent of SVC works and where there is a potential to impact on groundwater	Full Compliance

ID	Mitigation Measure	Site	Stage 2a - Station and Viaduct Civils	Stage 2b - Operations Trains and Systems
SG18	A groundwater monitoring network to monitor groundwater levels and groundwater quality would be established throughout the construction phase. The groundwater monitoring network would contain monitoring wells along the whole NWRL route intersecting groundwater in both Ashfield Shale and Hawkesbury Sandstone.	All	Partial Compliance – Only to the extent of SVC works and where there is a potential to impact on groundwater	Full Compliance Note: The monitoring network established by TSC under PA1 will be handed over to OTS.
SG19	Water sampling and testing of groundwater would be undertaken during construction to determine the most suitable treatment processes to meet the required water quality standards.	All	Partial Compliance – Only to the extent of SVC works and where there is a potential to impact on groundwater	Full Compliance
SG20	Groundwater quality would be subject to testing. Where it does not meet license requirements it would be treated prior to discharge.	All	Partial Compliance – Only to the extent of SVC works and where there is a potential to impact on groundwater	Full Compliance
SG22	All feasible and reasonable measures would be implemented during construction, to limit operational groundwater inflows to stations and crossovers. Any inflows would be collected and treated prior to discharge.	All	Partial Compliance – Only to the extent of SVC works and where there is a potential to impact on groundwater	Full Compliance
SG24	A groundwater water supply from the Hawkesbury Sandstone for construction purposes would be used where feasible and reasonable. Negotiation with the NOW would be undertaken regarding impacts and applicable licenses.	All	Partial Compliance – Only to the extent of SVC works and where there is a potential to impact on groundwater	Full Compliance
SG25	If ASS are encountered, they would be managed in accordance with the Acid Sulfate Soil Manual (Acid Sulfate Soil Management Advisory Committee, 1998)	All	Partial Compliance – Only to the extent of SVC works and where there is a potential to impact on groundwater	Full Compliance
<b>Groundwater Treatment</b>				
SG26	All feasible and reasonable opportunities for groundwater reuse for construction purposes or recycling nearby would be utilised in the first instance. Should groundwater inflows and required treatment volumes outstrip potential for water reuse for construction purposes, options for discharge would be investigated.	All	Partial Compliance – Only to the extent of SVC works and where there is a potential to impact on groundwater	Full Compliance
SG27	Where water salinity is found to be too high for discharge to creeks, brackish water reverse osmosis would be undertaken.	All	Partial Compliance – Only to the extent of SVC works and where there is a potential to impact on groundwater	Full Compliance
SG28	Dissolved iron would typically be removed from discharge water by oxidising the Ferric ion (Fe3+) to Ferrous (Fe2+) which enables precipitation and physical removal.	All	Partial Compliance – Only to the extent of SVC works and where there is a potential to impact on groundwater	Full Compliance
SG29	Water turbidity would typically be treated by settling / filters.	All	Partial Compliance – Only to the extent of SVC works and where there is a potential to impact on groundwater	Full Compliance
SG30	Iron reducing bacteria in discharge water would be typically treated by biocide dosing.	All	Partial Compliance – Only to the extent of SVC works and where there is a potential to impact on groundwater	Full Compliance
SG31	A typical discharge into a natural waterway (where approved) would require a groundwater treatment process that includes the following steps: <ul style="list-style-type: none"> <li>• Inlet buffer tank, with aeration</li> <li>• Coagulation / flocculation</li> <li>• Dissolved air floatation (solids removal)</li> <li>• Multimedia filtration (25 micrograms)</li> <li>• Cartridge filtration (2 micrograms)</li> <li>• Brackish water reverse osmosis</li> <li>• Disposal of water brine concentrate to sewer (dependent on future environmental policies)</li> <li>• Discharge of adequately treated water (into aquifer of origin, stormwater (creek catchments), sewer under a trade waste agreement, onsite reuse or recycling or a combination of these options).</li> </ul>	Sites 1 – 8	Partial Compliance – Only to the extent of SVC works and where there is a potential to impact on groundwater	Full Compliance
SG32	Groundwater discharge quality would comply with the relevant Environment Protection Licence	Sites 1 – 8	Partial Compliance – Only to the extent of SVC works and where there is a potential to impact on groundwater	Full Compliance



ID	Mitigation Measure	Site	Stage 2a - Station and Viaduct Civils	Stage 2b - Operations Trains and Systems
SG33	Specific processes regarding groundwater discharge and treatment methods would be identified during detailed design.	Sites 1 – 8	Partial Compliance – Only to the extent of SVC works and where there is a potential to impact on groundwater	Full Compliance
<b>Soil Salinity</b>				
SG34	Appropriate site specific soil salinity mitigation measures would be adopted in accordance with Draft Salinity Code of Practice (Western Sydney Regional Organisation of Councils, 2004) and the Guidelines to Accompany Map of Salinity Potential in Western Sydney (DIPNR 2002). These mitigation measures would be included within Sub-Plans to the CEMP at all sites within areas of known risk of soil salinity.	All	Full Compliance	Full Compliance
SG35	A soil salinity assessment would be undertaken for each high risk site in accordance with the Site Investigations for Urban Salinity (DLWC 2002), including Phase 2 and Phase 3 investigation. This assessment would enable site specific mitigation measures to be developed to ensure saline soils are appropriately managed and damage to the environment and infrastructure is minimised. These investigations would be informed by the completed groundwater monitoring program.	Sites 8, 9, 13 -15	Full Compliance	Full Compliance
<b>Soil contamination</b>				
SG36	A low concentration of lead was reported east of the proposed station. Further delineation and / or waste classification may be required, if excavation and offsite disposal of soil is to take place in this area, during the construction of Cherrybrook Station.	Site 4	NA	Full Compliance
SG37	Showground Station. Further delineation and / or waste classification may be required if excavation and offsite disposal of soil is to take place in this area, during the construction of the Showground Station due to nickel and Polycyclic aromatic hydrocarbons (PAH) impacts and the presence of asbestos fibres.	Site 5	NA	Full Compliance
SG38	Further waste classification in the area of Bella Vista Station may be required if excavation and offsite disposal of fill is to take place, during the construction of the Station due to concentrations of nickel in the fill material.	Site 8	Full Compliance	Full Compliance
SG39	Bella Vista to Rouse Hill (Open Cutting for Bella Vista Dive and skytrain). If excavation for offsite disposal is to take place, additional assessments for waste classification may be required as low TPH and heavy metals impacts were reported in fill samples. Further assessment in this area may be required if disturbance is to take place in this area.	Sites 8-14	Full Compliance	Full Compliance
SG40	Rouse Hill to Cudgegong Road (Earthworks and Bridges). Should excavation for offsite disposal take place, additional assessments for waste classification may be required as low TPH and phenol impacts were reported in fill samples. Not all of the Areas of Environmental Concern in this area have been specifically targeted, ie individual above-ground storage tanks, farm dams and asbestos in buildings. Additional assessment and waste classification may be required.	Sites 14 -17	Full Compliance	Full Compliance
SG41	Rouse Hill to Tallawong Stabling (On grade works). Not all of the Areas of Environmental Concern in this area were specifically targeted, ie individual above-ground storage tanks, farm dams and asbestos in buildings. Additional assessment and waste classification may be required.	Sites 14 -17	Full Compliance	Full Compliance
<b>Groundwater contamination</b>				

ID	Mitigation Measure	Site	Stage 2a - Station and Viaduct Civils	Stage 2b - Operations Trains and Systems
SG42	Castle Hill Station. Concentrations of CoPC were generally typical of background concentrations with the exception of trace levels of TPH found in a sample well. Due to this anomaly, further monitoring of the wells within the former service station site would be undertaken during the detailed construction planning stage of the project.	Site 5	NA	Full Compliance
SG43	Showground Station. TPH, PAH and phenol impacts were identified. As groundwater in the vicinity of the Hills Shire Depot is likely to be disturbed during construction of the Showground Station, impacts on the construction workers (via dermal contact and inhalation) as well as options for disposal management would be further assessed during the detailed construction planning stage of the project and further delineation, remediation or management would be required.	Site 6	NA	Full Compliance
SG44	Norwest Station. TPH impact has been identified. Given that groundwater in the vicinity of the Shell service station is likely to be disturbed during construction of the Norwest Station, impacts on the construction workers (via dermal contact and inhalation) as well as options for disposal management would need to be further assessed during the detailed construction planning stage of the project and further delineation, remediation or management would be required.	Site 7	NA	Full Compliance
SG45	Bella Vista Station. Should shallow seepage water be disturbed during construction of Bella Vista Station, further assessment of groundwater in the vicinity of the BP service station would be required owing to TPH and PAH impacts reported at the BP service station.	Site 8	Full Compliance	Full Compliance
SG46	Bella Vista to Rouse Hill (Open Cutting for Bella Vista Dive and skytrain). If groundwater is to be disturbed, groundwater management may be required due to low concentrations of TPH and PAH reported in this area.	Site 8 - 14	Full Compliance	Full Compliance
<b>Soil erosion and land surface</b>				
SG47	Soil and land remediation is to occur as soon as practicable following construction. This is to include remediation in stages as the construction process allows.	All	Full Compliance	Full Compliance
<b>Traffic and Transport</b>				
<b>Operation</b>				
OpT1	Advisory and way finding signage would be used to provide multi modal guidance to, from and within the station precincts.	Stations	NA	Full Compliance
OpT2	Maximising pedestrian accessibility to the stations with a view to reducing car based travel to and from the stations.	Stations	NA	Full Compliance
OpT3	Provision of cycle storage facilities at stations to increase the opportunity and catchment for non-motorised forms of transport to and from the stations.	Stations	NA	Full Compliance
OpT4	Provision of commuter car parking at selected stations to reduce total car based trip lengths and encourage the use of rail.	Stations	NA	Full Compliance
OpT5	Permanent Variable Message Signs, where feasible and reasonable, would be provided to advise drivers of any potential delays, traffic diversions, speed restrictions, or alternative routes.	Wider road network	NA	Full Compliance
<b>Construction</b>				
T1	Directional signage and line-marking would be used to direct and guide drivers, cyclists and pedestrians past construction sites and on the surrounding network. This would be supplemented by permanent and portable Variable Message Signs, where reasonable and feasible, to advise drivers of any potential delays, traffic diversions, speed restrictions, or alternative routes.	1 – 17	Full Compliance	Full Compliance



ID	Mitigation Measure	Site	Stage 2a - Station and Viaduct Civils	Stage 2b - Operations Trains and Systems
T2	The public would be notified of proposed traffic changes by newspaper, radio, project web site and other forms of community liaison.	1 – 17	Full Compliance – To be undertaken by TfNSW	Full Compliance – To be undertaken by TfNSW
T3	Co-ordination would occur with TfNSW and RMS via the Transport Management Centre's Traffic Operations Manager in the event of incidents or undue congestion.	1 – 17	Full Compliance	Full Compliance
T4	Management of pedestrian, cyclist and vehicular access to and past construction sites would occur to ensure safe entry and exit procedures. Depending on the location, this may require manual supervision, physical barriers, temporary traffic signals and modification to existing signals or, on occasions, police presence.	1 – 17	Full Compliance	Full Compliance
T5	Access to existing properties and buildings would be maintained.	1 – 17	Full Compliance	Full Compliance
T6	Traffic controllers would manage heavy vehicle movements at worksites, and monitor the need for pedestrian control.	1 – 17	Full Compliance	Full Compliance
T7	All trucks would enter and exit the worksites in a forward direction, where feasible and reasonable.	1 – 17	Full Compliance	Full Compliance
T8	The management of buses at key transport interchanges such as Castle Hill and Rouse Hill would be reviewed during detailed construction planning to minimise impacts on existing services.	5 and 14	Full Compliance	Full Compliance
T9	The T-way operations including car parking would be maintained at all times during the construction of the NWRL. This includes maintained existing sight lines to T-way bus stops and within T-way car parks, where possible. Where this is not possible, suitable alternative measures would be implemented (eg CCTV with active surveillance) where reasonable and feasible.	9 – 14	Full Compliance	Full Compliance
T10	The need for, and provision of, alternative remote parking locations and shuttle bus transfers for daytime and night time construction staff would be considered for all construction sites during detailed construction planning.	1 – 17	Full Compliance	Full Compliance
T11	Special event bus services for Sydney Olympic Park (Royal Easter Show, and Major Sporting and Entertainment Events) would be managed, in particular, in Carrington Road at the Showground Station site, to ensure minimal disruption.	6	NA	Full Compliance – To be undertaken by TfNSW
T12	The Traffic and Transport Liaison Group established for the NWRL would consider individual events and any other special event needs, and make reasonable and feasible short-term adjustment to the construction phase activities and / or review and update detailed Construction Traffic Management Plans.	1 – 17	Full Compliance – TTLG has been established by TfNSW under PA1	Full Compliance – TTLG has been established by TfNSW under PA1
T13	Site traffic would be managed, where reasonable and feasible, to avoid significant movements in the AM peak in the critical southbound direction and in the PM peak in the critical northbound direction on Beecroft Road at Epping.	1	NA	Full Compliance
T15	Access would be maintained to sections of the pedestrian bush track at Cheltenham which would not be affected by construction works. Additionally, the provision of an alternative track would be considered during construction planning.	3	NA	Full Compliance
T16	Access to the Bella Vista Station site during the daytime would be at a location off Celebration Drive to the east of the Lexington Avenue intersection to minimise traffic impacts at the Celebration Drive / Lexington Avenue intersection. The Celebration Drive / Lexington Avenue intersection would be used as an access during the night and at low traffic times.	8	Full Compliance	Full Compliance

ID	Mitigation Measure	Site	Stage 2a - Station and Viaduct Civils	Stage 2b - Operations Trains and Systems
T17	If construction of NWRL occurs before the Schofields Road upgrade, interim upgrading of the road would be undertaken (unless otherwise agreed with RMS) with improved pavement quality and wider sealed shoulders to accommodate heavy vehicle usage.	15 – 17	Full Compliance	Full Compliance
T18	A dilapidation report would be prepared prior to construction for all affected local roads from the construction access / egress point to the arterial road.	1 – 17	Full Compliance	Full Compliance
T19	An alternative pedestrian route via Ray Road and Kandy Avenue would be appropriately signposted for pedestrian movements between Epping Town Centre and the Beecroft Road M2 Motorway overbridge.	1	NA	Full Compliance
T20	Truck movements on Ray Road would be restricted during the AM and PM peak periods. During these times, truck access and egress to and from the site would be via Beecroft Road only.	1	NA	Full Compliance
T21	Staff working at the Epping Services Facility would be discouraged from parking on local roads and encouraged to: <ul style="list-style-type: none"> <li>• Use public transport.</li> <li>• Car share.</li> <li>• Park in a designated off-site area and access the site via shuttle bus.</li> </ul>	1	NA	Full Compliance
T22	Where schools occur in the immediate vicinity of the construction sites, heavy vehicle movements would be minimised (where reasonable and feasible), between 8:00-9:30 am and 2:30-4:00 pm Monday to Friday (on school days).	1 – 17	Full Compliance	Full Compliance
T23	Access and egress via Norwest Boulevard would be intermittent and only outside peak periods.	7	NA	Full Compliance
T24	Signage would be established at Epping to direct pedestrians via the alternative pedestrian route along Ray Road and Kandy Avenue.	1	NA	Full Compliance
T25	Construction traffic to and from the Cheltenham Services Facility would be directed to treat Beecroft Road / Kirkham Street intersection as left in / left out only.	3	NA	Full Compliance
T26	Alternative access to the Showground would be developed and detailed in the relevant Construction Traffic Management Plan.	6	NA	Full Compliance
T27	Alternative car parking would be provided, in consultation with The Hills Shire Council and the Castle Hill and Hills District Agricultural Society, for car spaces lost within the Showground precinct.	6	NA	Full Compliance
T28	Provision for buses to safely pull up to the indented bus bay located on Norwest Boulevard east of Century Circuit would be investigated as part of the relevant Construction Traffic Management Plan.	7	NA	Full Compliance
T29	Alternative car parking would be provided for car spaces lost at the Burns T-way bus stop. The alternative parking may be accommodated at the Balmoral Road T-way bus stop.	10	Full Compliance	Full Compliance
T30	Alternative car parking would be provided for car spaces lost at the Riley T-way bus stop. The alternative parking is likely to be provided to the north of Samantha Riley Drive.	11	Full Compliance	Full Compliance
T31	An alternative location for the cycle lockers at Rouse Hill would be identified during detailed construction planning.	14	Full Compliance	Full Compliance
T33	Either Cudgegong Road or Tallawong Road would remain open to traffic and bus services to maintain a route from Guntawong Road to Schofields Road.	17	Full Compliance	Full Compliance
Noise and Vibration				
Operation				

ID	Mitigation Measure	Site	Stage 2a - Station and Viaduct Civils	Stage 2b - Operations Trains and Systems
OpNV1	<p>The implementation of feasible and reasonable noise and vibration mitigation measures such as:</p> <ul style="list-style-type: none"> <li>• One metre high noise barriers with absorptive facing provided between Bella Vista Station and Cudgegong Road Station, except where the track is in cutting.</li> <li>• For the viaduct section, noise barriers located on the outer edge of both sides of the structure.</li> <li>• For the surface track, noise barriers positioned as close as possible to the train taking into account access and safety requirements.</li> </ul>	Bella Vista Station to Cudgegong Road Station	NA	Full Compliance
OpNV2	<p>The implementation of feasible and reasonable noise and vibration mitigation measures such as:</p> <ul style="list-style-type: none"> <li>• A two metre high noise barrier with absorptive facing provided on the side adjacent to the OK Caravan Park. Noise barriers positioned as close as possible to the train taking into account access and safety requirements.</li> <li>• A two metre high noise barrier provided opposite OK Caravan Park in the vicinity of the crossovers.</li> </ul>	Rouse Hill Station to Cudgegong Road Station	NA	Full Compliance
OpNV3	<p>The implementation of feasible and reasonable noise and vibration mitigation measures such as:</p> <ul style="list-style-type: none"> <li>• Rail dampers provided between Kellyville Station and Cudgegong Road Station, except in the immediate vicinity of stations where train speeds are lower.</li> </ul>	Kellyville Station to Cudgegong Road Station	NA	Full Compliance
OpNV4	<p>The implementation of feasible and reasonable noise and vibration mitigation measures such as:</p> <ul style="list-style-type: none"> <li>• Resilient rail fasteners provided on the viaduct and rail bridges.</li> </ul>	Viaduct and bridges	NA	Full Compliance
OpNV5	<p>During detailed design, options would be investigated to reduce airborne noise along the viaduct and surface track sections where exceedances have been predicted.</p>	Bella Vista Station to Cudgegong Road Station	NA	Full Compliance
OpNV6	<p>The implementation of feasible and reasonable noise and vibration mitigation measures such as:</p> <ul style="list-style-type: none"> <li>• Investigate the option of managing train speeds between Kellyville Station and Rouse Hill Station. The investigation would consider factors such as the impact to journey times and the receivers existing noise exposure from road traffic.</li> </ul>	Kellyville Station to Rouse Hill Station	NA	Full Compliance
OpNV7	<p>The implementation of feasible and reasonable noise and vibration mitigation measures such as:</p> <p>Standard, high and very high track attenuation provided through the tunnel section as shown indicatively in Figure 10.3 of EIS 2.</p>	Tunnels	NA	Full Compliance
OpNV8	<p>The implementation of feasible and reasonable noise and vibration mitigation measures such as:</p> <ul style="list-style-type: none"> <li>• The design of the sheds and equipment for the train wash and wheel lathe facilities would include noise mitigation as required in order to comply with the applicable noise criteria at the nearest noise sensitive receivers.</li> </ul>	Tallowong Stabling Facility	NA	Full Compliance

ID	Mitigation Measure	Site	Stage 2a - Station and Viaduct Civils		Stage 2b - Operations Trains and Systems
OpNV9	The implementation of feasible and reasonable noise and vibration mitigation measures such as: <ul style="list-style-type: none"> <li>Investigate the option to incorporate silencers in the compressed air lines of the rolling stock to reduce noise associated with brake air release events.</li> </ul>	Tallawong Stabling Facility		NA	Full Compliance
OpNV10	The implementation of feasible and reasonable noise and vibration mitigation measures such as: <ul style="list-style-type: none"> <li>Investigate methods to minimise rolling stock auxiliary noise levels during procurement.</li> </ul>	Tallawong Stabling Facility		NA	Full Compliance
OpNV11	The implementation of feasible and reasonable noise and vibration mitigation measures such as: <ul style="list-style-type: none"> <li>Noise sources at stations such as PA systems, air conditioners, substations and mechanical plant would be designed to meet the INP noise criteria.</li> </ul>	Stations		NA	Full Compliance
OpNV12	The implementation of feasible and reasonable noise and vibration mitigation measures such as: <ul style="list-style-type: none"> <li>Options would be investigated as part of the detailed design to reduce noise impacts from the operational car parks at Cherrybrook and Showground.</li> </ul>	Cherrybrook and Showground Stations		NA	Full Compliance
OpNV13	A detailed assessment of the road traffic noise impacts, including identification of preferred mitigation measures for the station access roads at Cherrybrook and Kellyville would be undertaken during detailed design.	Cherrybrook and Kellyville Stations		NA	Full Compliance
<b>Construction</b>					
NV1	Noise and vibration mitigation measures described in the Construction Noise and Vibration Strategy would be implemented (refer Appendix J of Technical Paper 3 of EIS 2).	All		Full Compliance	Full Compliance
NV5	Three metre high noise barriers (site hoardings) would be constructed around the perimeter of construction sites.	1 – 3, 5 – 7 and 14		Full Compliance	Full Compliance
NV6	Six metre high barriers would be constructed at Cherrybrook to manage night-time spoil truck movements.	4		NA	Full Compliance
NV7	Three metre high noise barriers (site hoardings) would be constructed at Bella Vista Station site on the north and eastern side of the main construction site and to the west of the station box.	8		NA	Full Compliance
NV8	Attended vibration monitoring would be undertaken at the nearest commercial building during high vibration activities to ensure vibration levels remain below safe limits.	1 and 5 – 7		NA	Full Compliance
NV9	Attended vibration monitoring would be undertaken at the nearest residential buildings during high vibration activities to ensure vibration levels remain below safe limits.	1, 3 and 4		NA	Full Compliance
NV10	Noise measurements in the Gold Class cinema complex at Castle Hill during high vibration activities would be undertaken to determine ground-borne noise levels. Depending on the results of this monitoring, discussions would be held with the cinema managers to identify additional feasible and reasonable mitigation measures such as respite period and use of alternative equipment.	5		NA	Full Compliance
NV13	Night-time truck access at Bella Vista Station site would be via the Celebration Drive roundabout to the south of the site.	8		Full Compliance	Full Compliance

ID	Mitigation Measure	Site	Stage 2a - Station and Viaduct Civils	Stage 2b - Operations Trains and Systems
NV16	Noise attenuation measures would be implemented where reasonable and feasible on tunnel ventilation equipment and other items of fixed plant (eg pumps, water treatment plant, diesel generators) that would be required to operate on a 24 hour per day, seven day per week basis in support of the underground works (eg ventilation fan enclosures and silencers, and additional enclosures and silencers for diesel generating equipment). At each site, the combined L <sub>Aeq</sub> noise from the operation of this equipment would aim to not exceed the rating background level at nearest residential receivers.	1 to 10	Partial Compliance – Only to the extent of SVC works at sites 8, 9 and 10	Full Compliance
NV18	A site management and / or physical mitigation solution would be implemented at the Epping Services Facility to ensure noise levels from onsite heavy vehicle movements during the night-time period comply with the sleep disturbance NML. This may include restricting night-time heavy vehicle access from Beecroft Road directly into the acoustic sheds and the establishment of a dedicated unloading bay directly adjacent to Beecroft Road for night-time deliveries.	1	NA	Full Compliance
European Heritage				
Operation				
OpEH1	Maintain the vegetation retained, reinstated and planted during the construction phase.	All	NA	Full Compliance
Construction				
EH3	Where feasible and reasonable, retain or reinstate an adequate buffer of vegetation along the northern side of Castle Hill Road opposite the Glenhope property to preserve the character of its setting and to screen the visual impacts of the station construction site in the northern outlook from the Glenhope property.	4	NA	Full Compliance
EH4	Where feasible and reasonable, retain or reinstate a buffer of vegetation along the western side of Franklin Road opposite Inala School.	4	NA	Full Compliance
EH5	If feasible, the existing mature plantings along the Old Northern Road edge of Arthur Whitling Park would be retained and protected during construction.	5	NA	Full Compliance
EH6	Reinstate key elements of Arthur Whitling Park in consultation with The Hills Shire Council, the Hills District Historical Society and the Castle Hill subbranch of the RSL, where feasible and reasonable.	5	NA	Full Compliance
EH7	Reinstate the landscaped public parkland (Arthur Whitling Park) following completion of construction.	5	NA	Full Compliance
EH8	Reinstate or rejuvenate any areas of the Showground disturbed for construction works following completion of the works.	6	NA	Full Compliance
EH9	Re-establish planted vegetation along the eastern side of the North-West T-way following completion of the construction works.	11 and 13	Full Compliance	Full Compliance
EH10	The viaduct would be designed and constructed to be as visually light and streamlined as possible. At Mungerie, the viaduct piers would be spaced widely and, where feasible and reasonable, symmetrically on either side of the carriage loop from Old Windsor Road <sup>1</sup> .	13	Full Compliance	NA
EH11	A buffer of trees between Mungerie and the rail corridor would be maintained. Any trees removed to facilitate construction would be reinstated on completion of works.	13	Full Compliance	Full Compliance
EH12	The area of the Mungerie carriage drive that would be removed during construction works would be reinstated <sup>1</sup> .	13	Full Compliance	Full Compliance

ID	Mitigation Measure	Site	Stage 2a - Station and Viaduct Civils	Stage 2b - Operations Trains and Systems
EH13a	Replacement planting of any heritage listed trees removed at Cheltenham would occur where feasible and reasonable in consultation with Council <sup>2</sup>	3	NA	Full Compliance
<b>Archaeological Sites</b>				
EH17	The two identified brick cisterns / wells at the Kellyville Station site would be retained in situ if feasible and reasonable.	11	NA – Stage 1a excavated and removed the identified brick cisterns as part of the European Excavation required from condition E10 of PA1	NA
EH20	Results and recommendations of the further research undertaken as per the EIS1 mitigation measures regarding areas of archaeological potential would be followed.	4, 5, 6, 11, 13, 16 and 17	Full Compliance – To be undertaken by TfNSW	Full Compliance
<b>Indigenous Heritage</b>				
<b>Operation</b>				
OplH1	Maintenance would be undertaken, of any permanent public interpretation within new railway stations.	Stations	NA	Full Compliance
<b>Construction</b>				
IH3	The boundary of the construction sites would be fenced to prevent construction personnel entering a PAD or known sites outside the construction footprint.	3, 4, 6, 11-16	Full Compliance	Full Compliance
IH4	The Indigenous Heritage component of the site induction would include information on: <ul style="list-style-type: none"> <li>• Aboriginal heritage conservation areas and/or no-go zones for each construction site.</li> <li>• The legislation and penalties for impacting Aboriginal heritage objects would be conveyed to all construction managers and personnel.</li> </ul>	1 to 17	Full Compliance	Full Compliance
IH5	TfNSW would consider permanent public interpretation within at least one of the new railway stations following development if an extensive and high value archaeological deposit were to be uncovered during the excavation of a site.	3, 4, 6, 9-17	NA	Full Compliance
IH6	Results and recommendations of the Phase 1 and 2 archaeological excavations undertaken as per the EIS1 mitigation measures (IH1 and IH2) would be followed.	3, 4, 6, 9 - 17	Full Compliance	Full Compliance
<b>Local Business</b>				
<b>Construction</b>				
LB1	A business consultation group would be formed to monitor, consider and provide business specific advice to manage the impacts during construction. Members of the consultation group may include representatives from local councils, and the NSW chamber of commerce and industry.	1, 3-17	Full Compliance	Full Compliance
LB2	The project has employed specialist Place Managers to act as a single, identifiable and direct point of contact for local residents, business people and community groups with the project during construction. Place Managers would work closely with all affected local businesses to help ensure timely responses to queries.	1, 3-17	Full Compliance – To be undertaken by TfNSW	Full Compliance – To be undertaken by TfNSW
LB3	A business impact risk register would be developed to identify, rate and manage the specific impacts associated with construction related works for individual businesses.	1, 3-17	Full Compliance – To be undertaken by TfNSW	Full Compliance – To be undertaken by TfNSW



ID	Mitigation Measure	Site	Stage 2a - Station and Viaduct Civils	Stage 2b - Operations Trains and Systems
LB4	A toll free number and website would be in place for the duration of the construction works to enable business owners and/or operators to receive prompt responses to their concerns, access information and view assistance measures in place during construction related works.	1, 3-17	Full Compliance – To be undertaken by TfNSW	Full Compliance – To be undertaken by TfNSW
Land use and community facilities				
Operation				
OpLC1	Consultation would continue between NWRL and DP&I to ensure the DP&I precinct planning process is integrated with NWRL station precinct planning so as to better integrate land use and transport connectivity.	Station precincts	Full Compliance – To be undertaken by TfNSW	Full Compliance – To be undertaken by TfNSW
OpLC2	It has been agreed with stakeholders that once operational, the completed precinct would incorporate appropriate recognition of the current war memorial.	Castle Hill Station	Full Compliance – To be undertaken by TfNSW	Full Compliance – To be undertaken by TfNSW
Construction				
LC1	Liaison would continue with statutory organisations, DP&I and local Councils to ensure the Project is integrated with local and regional land use planning, and that environmental planning instruments reflect the planning, construction and operation of the Project, and include integrated planning provisions to enhance potential future development.	All	Full Compliance – To be undertaken by TfNSW	Full Compliance – To be undertaken by TfNSW
LC2	Consultation would continue with the community throughout the project planning and construction phases to ensure that community members have adequate information about the project, the timing and scope of activities in their local area and impacts on their local facilities and recreational areas. Area specific Place Managers have been allocated to undertake this ongoing consultation.	All	Full Compliance – To be undertaken by TfNSW	Full Compliance – To be undertaken by TfNSW
LC3	Further consultation regarding the implications of the Project in relation to the Epping Town Centre Study would be undertaken with Hornsby Shire Council, Parramatta City Council and DP&I.	1	NA	Full Compliance – To be undertaken by TfNSW
LC4	Consultation with Cheltenham Oval user groups would be undertaken as part of identifying appropriate post-construction configuration and facilities for sporting activities.	3	NA	Full Compliance – To be undertaken by TfNSW
LC5	Consultation with stakeholders of Beecroft Reserve would be undertaken as part of identifying appropriate adjustments to walking trails both during construction (temporary adjustments) and operational phases (permanent adjustments). Enhancements or modifications to the trail network would also be considered as part of this process.	3	NA	Full Compliance – To be undertaken by TfNSW
LC6	Consultation with schools near the Cherrybrook site would be undertaken to develop specific mitigation measures to reduce impacts on their operation and amenity.	4	NA	Full Compliance
LC7	Consultation would be undertaken with the Castle Hill RSL Sub-Branch and The Hills Shire Council regarding appropriate management of the war memorial in Arthur Whiting Park. This would include consideration of possible temporary relocation and an appropriate long term solution.	5	NA	Full Compliance – To be undertaken by TfNSW
LC8	Activities occurring in Showground buildings and pavilions to be acquired as part of the construction footprint would be re-accommodated within the Showground precinct or as otherwise agreed with the Showground Trust.	6	NA	Full Compliance – To be undertaken by TfNSW

ID	Mitigation Measure	Site	Stage 2a - Station and Viaduct Civils	Stage 2b - Operations Trains and Systems
LC9	Consultation with Hillsong Church would be undertaken prior to construction to identify specific mitigation measures to reduce operational and amenity impacts.	7	NA	Full Compliance
LC10	Consultation with Emmanuel Baptist Church and Anglican Technical College Western Sydney would be undertaken prior to construction to identify specific mitigation measures to reduce operational and amenity impacts.	8	NA	Full Compliance
LC11	Consultation regarding the implications of the Project in relation to the Balmoral Road Release Area would be undertaken with The Hills Shire Council.	9 – 11	Full Compliance – To be undertaken by TfNSW	Full Compliance – To be undertaken by TfNSW
LC12	Consultation would be undertaken with relevant stakeholders regarding the implications of the project on the Rouse Hill Town Centre Northern Frame works.	14	Full Compliance – To be undertaken by TfNSW	Full Compliance – To be undertaken by TfNSW
LC13	Consultation regarding the implications of the project on the proposed land use plan for Area 20 would be undertaken with DP&I, Blacktown City Council and relevant stakeholders.	15 – 17	Full Compliance – To be undertaken by TfNSW	Full Compliance – To be undertaken by TfNSW
LC14	Opportunities to minimise temporary loss of land should be investigated through detailed construction planning and site layout, particularly in areas such as the Cheltenham Services Facility and Showground Station.	All	Full Compliance	Full Compliance
LC15	Consider staging construction, particularly at busy locations, to complement traffic management measures and assist in minimising disruption to key land uses and vehicle and pedestrian movements.	All	Full Compliance	Full Compliance
Ecology				
Operation				
OpE2	Noxious and environmental weeds would be controlled within the operational site boundary.	Within the operational site boundary.	NA	Full Compliance
OpE4	<i>The Best Practice Guidelines – Green and Golden Bell Frog Habitat</i> (DECC, 2008) would be followed during operation to protect and maintain any ephemeral breeding habitat for Green and Golden Bell Frog established as a result of the project.	Ephemeral breeding habitat for Green and Golden Bell Frog established as a result of the project.	NA	Full Compliance
OpE5	Regular visual inspections would be undertaken of creeks above tunnel sections and underground NWRL infrastructure, during operation, for a time period to be agreed with the NOW. Inspections would target permanent pools and be compared to pre-bore data collected and non-impacted reference sites. In the event that substantial drops in the water level of permanent pools are detected, further investigations would be undertaken to determine the cause. If changes are determined to be caused by, or suspected to be caused by, tunnels, mitigation measures would be discussed with the NOW and implemented as appropriate.	Creeks above tunnels/ NWRL infrastructure	NA	Full Compliance



ID	Mitigation Measure	Site	Stage 2a - Station and Viaduct Civils	Stage 2b - Operations Trains and Systems
OpE6	To reduce disturbance to bats and nocturnal birds where reasonable and feasible, a range of measures would be undertaken, such as: <ul style="list-style-type: none"> <li>Artificial lighting would be directed to where it is needed and in a downwards orientation to avoid light spillage, Artificial light would be positioned to face away from areas of native vegetation.</li> <li>Low-pressure sodium lamps would be used instead of high-pressure sodium or mercury lights. Where mercury lights are used, UV filters would be fitted.</li> <li>The brightness of lights would be reduced to as low as legally possible, and in conformance with workplace health and safety standards.</li> </ul> Amplified speakers would be directed downwards and away from areas of native vegetation	Surface track Stations Stabling facility Service facilities	NA	Full Compliance
OpE7	Maintenance of waterway crossings and structures would be undertaken in accordance with relevant guidelines such as <i>Fish and Fauna Friendly Waterway Crossings (Fairfull &amp; Witheridge, 2003)</i> and <i>Fish Passage Requirements of Waterway Crossings (2003)</i> .	Waterway crossings and structures	NA	Full Compliance
OpE9	The areas identified as 'likely' or 'potential' Groundwater Dependent Ecosystems (GDEs) would be monitored during operations in accordance with the groundwater monitoring plan (refer to Chapter 8 Soils and Groundwater for further details).	'likely' or 'potential' GDEs	NA	Full Compliance
Construction				
E1	The ecological component of the site induction would include information on: <ul style="list-style-type: none"> <li>Sensitivity of surrounding vegetation (particularly threatened vegetation).</li> <li>Sensitivity of threatened fauna species (birds and bats).</li> <li>Site environmental procedures (vegetation management, sediment and erosion control, protective fencing, weed control).</li> <li>Emergency and incident response/ spill management (chemical spills, fire, injured fauna).</li> </ul>	All	Full Compliance	Full Compliance
E2	Pre-clearing surveys would be undertaken to identify the presence of: <ul style="list-style-type: none"> <li>Hollow bearing trees and other habitat features</li> <li>Threatened flora and fauna.</li> </ul>	All	Full Compliance	Full Compliance
E6	Trees containing hollows would be felled using "Slow drop" technique (or similar as agreed with OEH). The slow-drop technique involves nudging and shaking the tree, followed by a controlled lowering of the tree to the ground.	All	Full Compliance	Full Compliance
E7	Where feasible and reasonable, topsoil and habitat elements (eg logs and felled trees) from sites that have few weed species would be stored and reused onsite.	All	Full Compliance	Full Compliance
E8	Site offices, stockpiles, machinery wash down areas, and plant storage areas would be located outside of any ecologically sensitive areas being retained onsite.	All	Full Compliance	Full Compliance
E9	Fuel (or other chemical) storage would be located outside all riparian zones, and at least 10m from any retained ecologically sensitive areas onsite.	All	Full Compliance	Full Compliance
E10	Construction sites would be revegetated using endemic native plant species where appropriate.	All	Full Compliance	Full Compliance

ID	Mitigation Measure	Site	Stage 2a - Station and Viaduct Civils	Stage 2b - Operations Trains and Systems
E12	To prevent establishment or spread of weeds: <ul style="list-style-type: none"> <li>• Machinery would be cleaned before entering work sites.</li> <li>• Weeds would be removed from within the mapped native vegetation areas at least 10m from the edge of the construction footprint (where access allows).</li> <li>• Cleared weed material would be disposed of at a site licensed to receive green waste.</li> </ul>	All	Full Compliance	Full Compliance
E15	To reduce disturbance to bats and nocturnal birds where reasonable and feasible, a range of measures would be undertaken, such as: <ul style="list-style-type: none"> <li>• Artificial lighting would be directed to where it is needed and in a downwards orientation to avoid light spillage, Artificial light would be positioned to face away from areas of native vegetation.</li> <li>• Low-pressure sodium lamps would be used instead of high-pressure sodium or mercury lights. Where mercury lights are used, UV filters would be fitted.</li> <li>• The brightness of lights would be reduced to as low as legally possible, and in conformance with workplace health and safety standards.</li> <li>• Amplified speakers would be directed downwards and away from areas of native vegetation.</li> </ul>	All	Full Compliance	Full Compliance
E21	<i>Maintenance</i> of waterway crossings and structures would be undertaken in accordance with relevant guidelines such as Fish and Fauna Friendly Waterway Crossings (Fairfull & Witheridge, 2003) and Fish Passage Requirements of Waterway Crossings (2003).	All	Full Compliance	Full Compliance
E22	Where native vegetation is to be retained adjacent to or within construction sites, protective fencing and signage (installed as part of EIS1) would be maintained in accordance with Australian Standard 4970 – 2009 Protection of Trees.	All	Full Compliance	Full Compliance
Visual amenity				
Operation				
OpV1	High quality landscape and urban treatments would be used in and around stations.	Stations	NA	Full Compliance
OpV2	Cut-off and directed lighting would be used to ensure glare and light spill on surrounding existing and future residents are minimised.	All	NA	Full Compliance
OpV3	The colour and materials of service facility buildings would be selected to blend into adjacent bushland setting.	Service facilities	NA	Full Compliance
OpV4	Landform would be used to conceal buildings where reasonable and feasible	Stations and service facilities	NA	Full Compliance
OpV5	Street tree planting would be used to visually soften roads and car parking areas.	All	NA	Full Compliance
OpV6	Large specimen trees would be incorporated into the plaza at Castle Hill to create an immediate softening effect.	Castle Hill Station	NA	Full Compliance
OpV7	The viaduct between Rouse Hill and Cudgegong Station would be treated to maximise visual integration with surrounding landscape in views from Rouse Hill House. This may include the use of dark colours, landform mounding and buffer planting.	Viaduct	NA	Full Compliance

ID	Mitigation Measure	Site	Stage 2a - Station and Viaduct Civils	Stage 2b - Operations Trains and Systems
OpV8	Where noise walls are proposed, potential visual impacts would be reduced through high quality urban design treatments developed in consultation with adjacent property owners.	All	NA	Full Compliance
OpV9	Earth mounding would be used as appropriate to improve the effectiveness of buffer planting areas where space permits and as appropriate, particularly where significant vegetation would be lost.	All	NA	Full Compliance
OpV10	The design and ongoing maintenance of the project would adopt CPTED principles, including the maintenance of unobstructed views into and outside of underpasses, effective drainage and ventilation, wide corridors and appropriate lighting.	All	NA	Full Compliance
<b>Construction</b>				
V1	Existing vegetation around the perimeter of the construction sites would be retained where feasible and reasonable to act as a visual screen.	1 – 17	Full Compliance, to the geographical extent of SVC works	Full Compliance
V2	Cut-off and directed lighting would be used to ensure glare and light trespass are minimised.	1 – 17	Full Compliance, to the geographical extent of SVC works	Full Compliance
V3	Where feasible and reasonable the elements within construction sites would be located to minimise visual impact, eg setting particular equipment/ structures back from the site boundaries to minimise their visual impact.	1 – 17	Full Compliance, to the geographical extent of SVC works	Full Compliance
V4	Regular maintenance of site hoarding and perimeter site areas would be undertaken, including the prompt removal of graffiti.	1 – 17	Full Compliance, to the geographical extent of SVC works	Full Compliance
V5	Visual mitigation would be implemented as soon as feasible and reasonable, and remain for the duration of the construction period.	1 – 17	Full Compliance, to the geographical extent of SVC works	Full Compliance
V6	Monitoring of the effectiveness of mitigation measures would be undertaken by the relevant construction contractor. This would primarily include regular visual inspection of the condition of the various measures.	1 – 17	Full Compliance, to the geographical extent of SVC works	Full Compliance
V7	The colour and materials of acoustic sheds at selected sites would be selected to blend into adjacent bushland or rural setting.	1 – 4 and 8	NA	Full Compliance
V8	The design of acoustic sheds as visual features would be considered where there is limited opportunity to make them recede.	5 and 8	NA	Full Compliance
V9	Designing hoarding as a feature would be considered at appropriate locations. This may include artworks or project information. These would be installed as early as feasible and reasonable in the construction process.	1, 4, 6 – 8 and 14	Full Compliance, to the geographical extent of SVC works	Full Compliance
V10	Hoardings would be designed to visually recede in more rural or bushland settings.	3 – 5, 9 – 13 and 15 – 17	Full Compliance, to the geographical extent of SVC works	Full Compliance
<b>Climate change and greenhouse gas emissions</b>				
<b>Operational greenhouse gas</b>				
OpGHG1	The NWRL would minimise GHG emissions through energy reduction and avoidance, energy efficiency and onsite and offsite renewable or low carbon energy in accordance with the NWRL Environment and Sustainability Policy.	All	NA	Full Compliance
OpGHG2	Options would be explored for offsetting 100% of carbon emissions associated with the use of electricity during operation of the project.	All	NA	Full Compliance
OpGHG3	Options would be explored for offsetting a portion of carbon emissions associated with the annual operational energy demand at precincts (including car parks) from onsite renewable or low carbon sources.	Station precincts	NA	Full Compliance

ID	Mitigation Measure	Site	Stage 2a - Station and Viaduct Civils	Stage 2b - Operations Trains and Systems
OpGHG4	The NWRL would source at least 5% of the annual operational energy demand at the station buildings from onsite renewable or low carbon sources.	Stations	NA	Full Compliance
OpGHG5	The NWRL would source at least 10% of the annual operational energy demand at the Tallawong Stabling Facility (not including that required for traction) from onsite renewable or low carbon sources.	Tallawong Stabling Facility	NA	Full Compliance
OpGHG6	GHG emissions arising from use of refrigerants, electricity and materials would be minimised through design initiatives incorporated into the NWRL stations, rail infrastructure and systems. Example initiatives include, but are not limited to, maximising regenerative braking, natural ventilation, daylighting, energy efficient Heating, Ventilation and Air Conditioning (HVAC) and selection of material with low embodied materials.	All	NA	Full Compliance
<b>Operational climate change adaptation</b>				
OpCC1	The project Climate Change Risk Assessment would be updated during detailed design to identify adaptation responses for the years 2030 and 2070.	All	Full Compliance	Full Compliance
<b>Construction greenhouse gas</b>				
GHG1	Spoil management would be undertaken in accordance with the spoil reuse hierarchy.	All	Full Compliance	Full Compliance
GHG2	Where feasible and reasonable local materials would be preferentially used.	All	Full Compliance	Full Compliance
GHG3	If feasible and reasonable low GHG intensive alternative fuels (for example biofuels) would be used in construction equipment and vehicles.	All	Full Compliance	Full Compliance
GHG4	Vehicles with low fuel consumption ratings would be preferentially used where feasible and reasonable.	All	Full Compliance	Full Compliance
GHG5	Construction equipment and vehicle operators would be trained in driving practices which reduce fuel consumption.	All	Full Compliance	Full Compliance
GHG6	Construction equipment and vehicles would be regularly maintained to maximise fuel efficiency.	All	Full Compliance	Full Compliance
GHG9	A minimum of 20% of electricity needs associated with construction works would be offset.	All	Full Compliance	Full Compliance
GHG11	If feasible and reasonable materials with lower embodied emissions would be preferentially specified for use.	All	Full Compliance	Full Compliance
GHG12	An updated GHG assessment would be prepared during the detailed design stage of the project.	All	Full Compliance	Full Compliance
<b>Surface Water and flooding</b>				
<b>Operation</b>				
OpSW1	Procedures to quickly address any contaminant spill or accident would be developed and implemented during operation of the station sites.	All	NA	Full Compliance
OpSW2	All feasible and reasonable opportunities for captured surface water reuse would be utilised in the first instance.	Tunnel	NA	Full Compliance
OpSW3	Surface water discharge quality would be required to comply with the relevant Environment Protection Licence	All	NA	Full Compliance
OpSW4	Treatment measures would be applied to water collected in on site detention basins, including settling of coarse sediments, the use of flocculation for finer sediments and pH correction.	All	NA	Full Compliance

ID	Mitigation Measure	Site	Stage 2a - Station and Viaduct Civils	Stage 2b - Operations Trains and Systems
OpSW5	Entries to below ground stations would be located above the PMF level for mainstream flooding and local measures provided to manage the ingress of runoff from local overland flooding up to the PMF.	Stations	NA	Full Compliance
OpSW6	The stabling facility would be located above the 100 year ARI flood level.	Stabling	NA	Full Compliance
OpSW7	Tunnel entries would be located above the PMF level for mainstream flooding and local measures provided to manage the ingress of runoff from local overland flooding up to the PMF.	Tunnels	NA	Full Compliance
OpSW8	The rail line would be located above the 100 year ARI flood level to provide an appropriate level of flood immunity.	At Grade Tracks	NA	Full Compliance
OpSW9	Entries to below ground services facilities would be located above the PMF level for mainstream flooding and local measures provided to manage the ingress of runoff from local overland flooding up to the PMP.	Services Facilities	NA	Full Compliance
OpSW10	Critical rail system infrastructure such as substations and sectioning huts would be located at a suitable level above the 100 year ARI peak flood level to protect against mainstream and local overland flooding.	Services Facilities	NA	Full Compliance
OpSW11	Development within the floodplain would be designed to minimise adverse impacts on adjacent development for flooding up to the 100 year ARI event. And would be designed to maintain the operation of key evacuation routes, minimise impacts on critical infrastructure and flood hazard for flooding up to the PMF.	All	Full Compliance	Full Compliance
OpSW12	OSD would be provided where required to mitigate impacts associated with increased impervious areas.	Stations	NA	Full Compliance
OpSW13	Local drainage systems and overland flowpaths at all precincts would be designed to provide appropriate flood immunity to the precincts and minimise the risk of ingress of floodwaters to the underground stations.	Stations and Stabling	NA	Full Compliance
OpSW14	Water quality treatment measures (including a combination of swales, bioretention systems, water quality basins, gross pollutant traps) would be integrated into the drainage system to mitigate impacts to waterways.	All	NA	Full Compliance
OpSW15	A holistic approach to water quality and stormwater management would be adopted that incorporates Water Sensitive Urban Design principles to minimise impacts on the existing hydrologic regime. Such measures would include: <ul style="list-style-type: none"> <li>Managing total runoff volumes through the use of rainwater tanks and measures that promote stormwater infiltration.</li> <li>Minimising increases in peak flows through the use of detention and retention measures as appropriate.</li> <li>Preserving and enhancing the amenity of waterways by maintaining or providing natural vegetated measures.</li> <li>Treating stormwater through a range of at source and end point measures that are integrated with the urban landscape.</li> </ul>	All	NA	Full Compliance
OpSW16	A surface water quality monitoring program would be developed post construction for the station precincts, services facilities and the stabling depot to monitor water quality upstream and downstream of the works. Monitoring procedures and performance criteria would be established in consultation with local councils and relevant government agencies.	All	NA	Full Compliance

ID	Mitigation Measure	Site	Stage 2a - Station and Viaduct Civils	Stage 2b - Operations Trains and Systems
Construction				
Flooding				
SW3	Construction equipment (or excess material) would be removed from waterway or flood prone areas if wet weather is approaching and at the completion of each day's work activity. The extent of the flood prone area would be defined during detailed construction planning.	1 – 17	Full Compliance	Full Compliance
SW4	Temporary levees or bunds would be strategically placed to contain potential flooding impacts resulting from any temporary works on the floodplain and minimise the risk to surrounding properties which might otherwise be affected.	1 – 17	Full Compliance	Full Compliance
SW5	Entries to tunnel excavations would be protected against flooding by locating openings outside flood prone areas, local bunding and / or appropriate drainage.	1 – 9 and tunnels	Partial Compliance – Only to the extent of SVC works at sites 8 and 9	NA
SW6	The flood standard adopted at each tunnel entry during Stage 2 construction would need to be developed taking into consideration the duration of construction, the magnitude of inflows and the potential risks to the project works and personal safety.	1 – 9 and tunnels	Partial Compliance – Only to the extent of SVC works at sites 8 and 9	Full Compliance
SW12	Stockpile sites would be generally located outside the 20 year ARI flood. The exact level of flood immunity provided to stockpile sites would depend on the duration of stockpiling operations, the type of material stored and the nature of the downstream waterway or any other specified requirements. This would be defined during detailed construction planning.	1 – 17	Full Compliance	Full Compliance
SW14	Water quality mitigation measures would be implemented in accordance with relevant requirements of: <ul style="list-style-type: none"> <li>• Landcom Managing Urban Stormwater - Soils and Construction Volumes 1 and 2 (often referred to as the Blue Book, 2004 and 2006).</li> <li>• NOW Guidelines for Controlled Activities.</li> <li>• ANZECC Guidelines for Fresh and Marine Water Quality.</li> <li>• ANZECC Guidelines for Water Quality Monitoring and Reporting.</li> <li>• <i>Water Management Act 2000</i>.</li> <li>• Applicable Environment Protection Licences.</li> </ul>	All	Full Compliance	Full Compliance
SW15	Treatment measures would be applied to water collected in sediment basins, including settling of coarse sediments, the use of flocculation for finer sediments and pH correction.	9 – 17	Full Compliance	Full Compliance
SW16	As a first preference, treated surface water collected in sediment basins would be reused onsite, eg for dust suppression. Additional opportunities for re-using water on site or for construction would be investigated and implemented where feasible and reasonable.	9 – 17 and tunnels	Full Compliance	Full Compliance
Erosion and Sediment Control				
SW17	Exclusion zones would be designated on construction sites to limit disturbance.	1 – 17	Full Compliance	Full Compliance
SW18	Re-vegetating or stabilising disturbed areas would occur as soon as feasible.	1 – 17	Full Compliance	Full Compliance
SW20	Appropriate erosion control measures would be installed such as sediment fencing, check dams, temporary ground stabilisation, diversion berms or site regrading.	1 – 17	Full Compliance	Full Compliance
SW21	Clean water runoff would be diverted away from the works or disturbed areas wherever possible.	1 – 17	Full Compliance	Full Compliance
SW22	Temporary sediment basins would be installed as appropriate. The exact size and layout of sediment basins would be determined as part of the CEMP in accordance with the requirements of the relevant Environment Protection Licence.	1 – 17	Full Compliance	Full Compliance



ID	Mitigation Measure	Site	Stage 2a - Station and Viaduct Civils	Stage 2b - Operations Trains and Systems
SW26	Surface controls to promote ground stability, limit run-off lengths and reduce run-off velocities within the work sites would be implemented.	1 – 17	Full Compliance	Full Compliance
SW27	Ground stability would be re-established as soon as practicable following the completion of construction.	1 – 17	Full Compliance	Full Compliance
SW28	Installation of any permanent scour protection measures required for the operational phase would occur as soon as practical.	1 – 17	Full Compliance	Full Compliance
<b>Riparian Areas</b>				
SW32	Where water is released into local creeks, outlet scour protection and energy dissipation would be implemented. The discharge point would be at the upstream end of a large pool where feasible and reasonable, to allow for slowing of water.	1 – 4, 6 and 8 – 17	Full Compliance	Full Compliance
SW37	Temporary stockpile locations for both site establishment and earthworks operations would be specified prior to the commencement of construction activities. Diversion drains and erosion and sediment control measures would be in place prior to the commencement of any stockpiling activities. Material would only be stockpiled in designated stockpiling areas.	1 – 17	Full Compliance	Full Compliance
<b>Contamination and Spills</b>				
SW38	Site specific controls would be developed to reduce the potential for environmental releases of potentially harmful chemicals and to reduce the risk of any such releases entering local waterways. Storage of hazardous materials such as oils, chemicals and refuelling activities would occur in bunded areas.	All	Full Compliance	Full Compliance
<b>Monitoring and Implementation</b>				
SW40	A qualified environmental officer would be employed to advise on appropriate controls and to monitor the implementation and maintenance of mitigation measures.	All	Full Compliance	Full Compliance
SW41	All site staff would be engaged through toolbox talks or similar with appropriate training on soil and water management practices.	All	Full Compliance	Full Compliance
SW42	A surface water quality monitoring program for the construction period would be implemented to monitor water quality upstream and downstream of the construction areas. The monitoring programme would commence prior to commencement of any construction works and would build on available water quality data.	1 – 17	Full Compliance	Full Compliance
SW43	Surface water and water quality monitoring would be carried out periodically and after rainfall events. Monitoring would examine a range of appropriate indicators in accordance with standard guidelines.	1 – 17	Full Compliance	Full Compliance
SW44	Inspection of water quality mitigation controls (eg sediment fences, sediment basins) would be carried out regularly and following significant rainfall to detect any breach in performance.	All	Full Compliance	Full Compliance
SW45	A stormwater management plan that identifies the appropriate design standard for flood mitigation based on the duration of construction, proposed activities and flood risks would be developed for each construction site. The plan would develop procedures to ensure that threats to human safety and damage to infrastructure are not exacerbated during the construction period.	All	Full Compliance	Full Compliance
<b>Air Quality</b>				
<b>Operation</b>				
OpA1	Develop an OEMP including an Air Quality section	All	NA	Full Compliance

ID	Mitigation Measure	Site	Stage 2a - Station and Viaduct Civils	Stage 2b - Operations Trains and Systems
OpA2	Location and design of air ventilation, car parks and kiss and ride facilities to consider avoidance of air quality impacts on sensitive receivers.	Stations Service facilities	NA	Full Compliance
<b>Construction</b>				
A1	Working face and areas of open excavation would be kept to a minimum, where feasible and reasonable.	All	Full Compliance	Full Compliance
A2	Water suppression would be used for active earthwork areas, stockpiles, gravel roads and loads of soil being transported to reduce wind-blown dust emissions.	All	Full Compliance	Full Compliance
A3	Waste or any other material would not be burnt on construction sites.	All	Full Compliance	Full Compliance
A4	The amount of excavated material held on site would be minimised.	All	Full Compliance	Full Compliance
A5	Areas of exposed earth would be minimised by staging construction activities and progressively landscaping and vegetating completed areas as the construction activities proceed, where feasible and reasonable.	All	Full Compliance	Full Compliance
A6	Enclosed rubble chutes and conveyors would be used where feasible and reasonable. Drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment would be minimised and/or water used to suppress dust emissions from such equipment.	All	Full Compliance	Full Compliance
A7	Cutting, grinding or sawing equipment would only be used in conjunction with suitable dust suppression techniques such as water sprays or local extraction.	All	Full Compliance	Full Compliance
A8	Wind breaks, which may include site hoardings, would be constructed, where construction works are in close proximity to sensitive receptors and where feasible and reasonable.	All	Full Compliance	Full Compliance
A9	Dust generating activities would be assessed during periods of strong winds and rescheduled, where required.	All	Full Compliance	Full Compliance
A10	All vehicles carrying loose or potentially dusty material to and/or from the site would be covered.	All	Full Compliance	Full Compliance
<b>Spoil Stockpiles</b>				
A11	Stockpiles would be located away from sensitive receivers, where feasible and reasonable, and protected from the elements through barriers, covering or establishing a cover crop.	All	Full Compliance	Full Compliance
<b>Haul Roads</b>				
A12	Longer term and/or heavily used haul roads would generally be sealed. The criteria for sealing haul roads would be defined during detailed construction planning. Sealed haul roads would be regularly cleaned.	All	Full Compliance	Full Compliance
A13	Unsealed haul roads would be regularly damped down with fixed or mobile sprinkler systems.	All	Full Compliance	Full Compliance
A14	Vehicular and foot traffic would be restricted to designated areas.	All	Full Compliance	Full Compliance
A15	Appropriate site speed limits would be imposed and signed on haul routes.	All	Full Compliance	Full Compliance
A16	Wheel-wash facilities or rumble grids would be provided and used near site exit points, and a street-cleaning regime would be implemented to remove any dirt tracked onto roads.	All	Full Compliance	Full Compliance
<b>Vehicles and Equipment</b>				



ID	Mitigation Measure	Site	Stage 2a - Station and Viaduct Civils	Stage 2b - Operations Trains and Systems
A23	Engines of onsite vehicles and plant would be switched off rather than left idling for extended periods of time.	All	Full Compliance	Full Compliance
A24	Low emission vehicles and plant fitted with catalysts, diesel particulate filters or similar devices would be used, where feasible and reasonable.	All	Full Compliance	Full Compliance
A25	Plant would be well maintained and serviced in accordance with manufacturers' recommendations.	All	Full Compliance	Full Compliance
A26	Haul routes and plant (including generators) would be sited away from sensitive receivers, such as dwellings and schools, where feasible and reasonable.	All	Full Compliance	Full Compliance
A27	Vehicle emissions would be minimised through methods such as using alternative modes of transport, such as encouraging car pooling by construction workers, and maximising vehicle utilisation by ensuring full loading and efficient routing.	All	Full Compliance	Full Compliance
A28	Precautions would be implemented to prevent the occurrence of smoke emissions or fumes from site plant or stored fuel oils.	All	Full Compliance	Full Compliance
<b>Waste and resource management</b>				
<b>Operation</b>				
OpW1	Develop an Operational Environmental Management Plan including a section on Operational Waste and Resource Recovery Management. This would detail opportunities for avoiding waste generation and responsible disposal methods for different waste streams.	All	NA	Full Compliance
OpW2	Design innovation during the detailed design stage of the NWRL would provide opportunities to reduce the amount of resources required for operation.	All	NA	Full Compliance
<b>Construction</b>				
W1	All waste would be assessed, classified, managed and disposed of in accordance with the Waste Classification Guidelines (DECC, 2008).	All	Full Compliance	Full Compliance
W2	All waste materials removed from the sites would only be directed to a waste management facility lawfully permitted to accept the materials.	All	Full Compliance	Full Compliance
W3	Excavated material and spoil would be beneficially reused on the project site or other sites, where feasible and reasonable, in accordance with the spoil use hierarchy.	All	Full Compliance	Full Compliance
W4	Appropriate storage, treatment and disposal procedures would be implemented for any contaminated spoil.	All	Full Compliance	Full Compliance
W5	Cleared site vegetation would be mulched for reuse in rehabilitation and landscaping works. Topsoil generated during site preparation activities would be stockpiled for reuse in landscaping activities.	All	Full Compliance	Full Compliance
W6	Initial and ongoing education would be provided to staff and sub-contractors regarding the importance of appropriately managing waste.	All	Full Compliance	Full Compliance
W7	Recyclable wastes, including paper at site offices, would be stored separately from other wastes. Storage facilities would be secure and recyclables collected on a regular basis.	All	Full Compliance	Full Compliance
W8	Reusable materials would be stored separately, in secure facilities.	All	Full Compliance	Full Compliance
W9	Worksites would be free of litter and good housekeeping would be maintained.	All	Full Compliance	Full Compliance
W10	Vermin proof bins would be utilised onsite.	All	Full Compliance	Full Compliance
W11	Waste oil, other liquid wastes and spillages would be collected and stored in bunded areas.	All	Full Compliance	Full Compliance

ID	Mitigation Measure	Site	Stage 2a - Station and Viaduct Civils		Stage 2b - Operations Trains and Systems
W13	Waste truck loads would be covered, and tailgates secured prior to trucks leaving the worksite.	All		Full Compliance	Full Compliance
W14	Centralised reporting and auditing of waste volumes and disposal destinations would be employed.	All		Full Compliance	Full Compliance
W15	Construction waste would be minimised by accurately calculating materials brought to the site and limiting materials packaging.	All		Full Compliance	Full Compliance
W16	Materials such as (noise hoarding, site fencing, and so on) would be reused or shared, between sites and between construction contractors where feasible and reasonable.	All		Full Compliance	Full Compliance
Cumulative Impacts					
Operation					
OpC1	Internal and external cumulative impacts for the operation of the NWRL would be managed and mitigated through a project wide OEMP.	All		NA	Full Compliance
Construction					
Cl1	Internal and external cumulative impacts for the NWRL Stage 1 and Stage 2 construction works would be managed and mitigated through a project wide Construction Environmental Management Framework	All		Full Compliance – cumulative impacts to be managed through contractors CEMP's and community plans required under PA1 and PA2	Full Compliance
Cl2	During construction, proponents of other major construction works in the vicinity of the SSI shall be consulted and reasonable steps taken to coordinate works to minimise impacts on, and maximise respite for, affected sensitive receivers.	All		Full Compliance	Full Compliance
Cl3	TfNSW would review environmental impacts every six months during the construction phase. Any new impacts identified during construction would be addressed appropriately to reduce the cumulative effects and reported.	All		Full Compliance	Full Compliance

Notes:

Site 1 – Epping Services Facility

Site 3 – Cheltenham Services Facility

Site 4 – Cherrybrook Station

Site 5 – Castle Hill Station

Site 6 – Hills Centre Station

Site 7 – Norwest Station

Site 8 – Bella Vista Station

Site 9 – Balmoral Road

Site 10 – Memorial Avenue

Site 11 – Kellyville Station

Site 12 – Samantha Riley Drive to Windsor Road

Site 13 – Old Windsor Road to White Hart Drive

Site 14 – Rouse Hill Station

Site 15 – Windsor Road Viaduct

Site 16 – Windsor Road Viaduct to Cudgegong Road

Site 17 – Cudgegong Road Station and Tallawong Stabling Facility, and Tunnels